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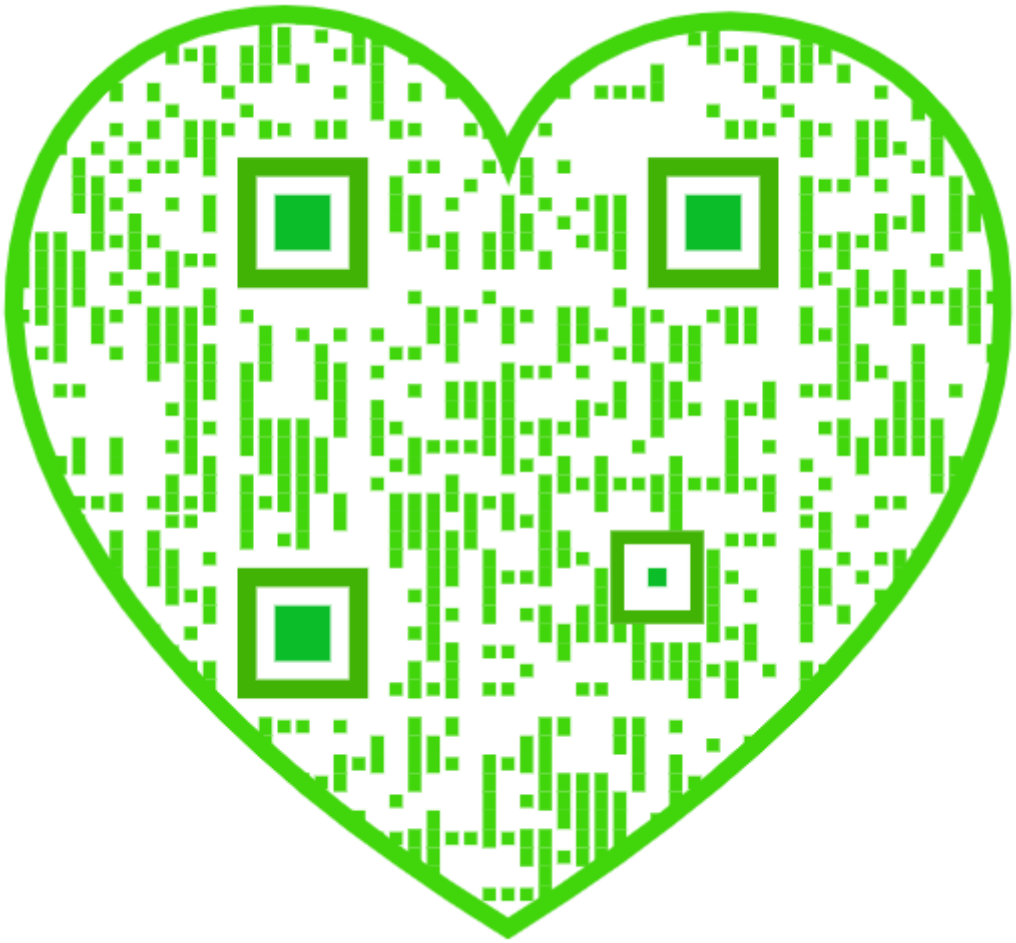

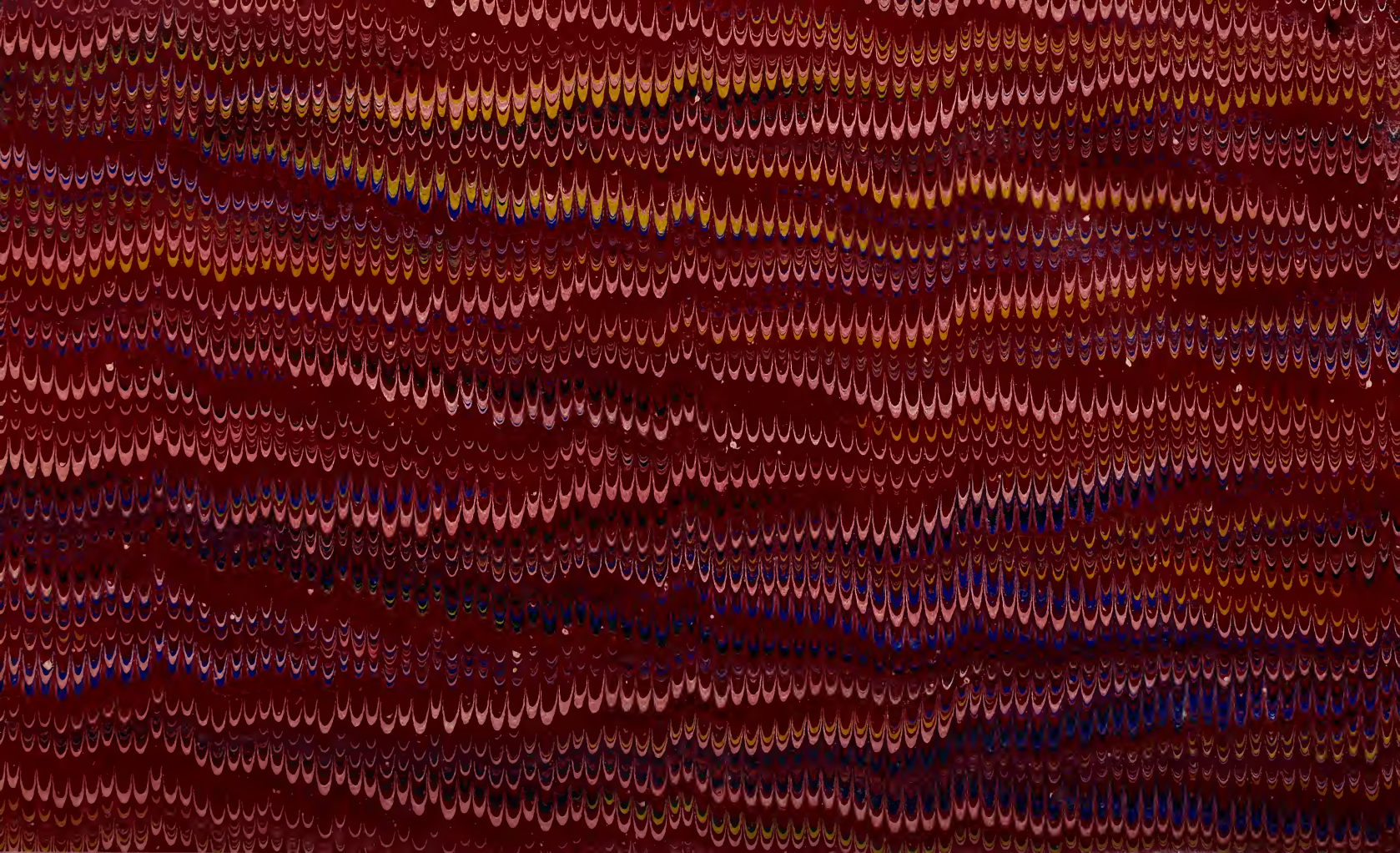

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A TREATISE

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WITH THE

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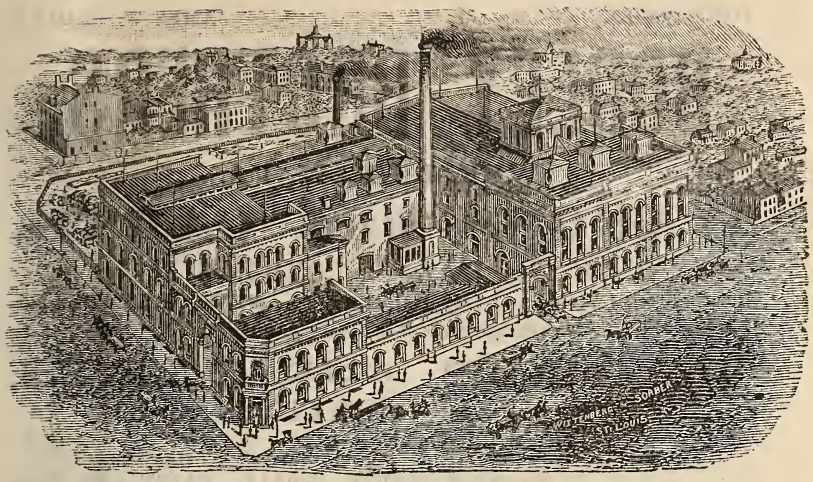

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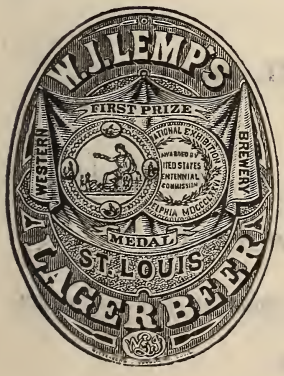

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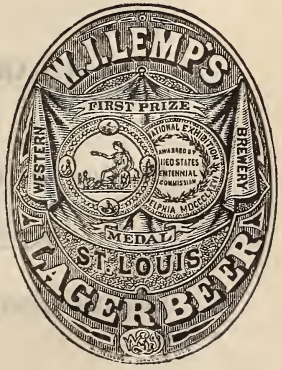

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THE COTTON WORM

(ANOMIS XYLINÆ),

ITS HISTORY, APPEARANCE, PREVENTIVES AND DESTROYERS.

When fires devastate or floods destroy, their ravages are usually confined to comparatively limited damages, which insurances or other protective agencies cover; or, if the visitations are more extensive and severe, the the whole people sympathize with the sufferers, and give substantial and willing aid in making up their losses. When a large conflagration or destructive storm sweeps away a portion of a city or through a rural district, the disaster is regarded as a common calamity, and immediately meetings are held, money liberally subscribed, and every measure taken to relieve and reimburse the victims of the catastrophe; but when the more destructive army worm makes its ruinous raids on the cotton fields, crippling the energies and destroying the hopes and means of subsistence of the tens of thousands, there is little commiseration for the planter, or for the merchant, tradesman, manufacturer and hosts of others involved in his misfortune.

The idea of preparing an abstract on the cotton caterpillar was first suggested to me by Mr. John J. Ferguson, of Alexandria, La., and was subsequently warmly urged by many others to whom I mentioned the subject.

In my researches for information, I have been kindly and ably assisted by the Hon. Wm. G. LeDuc, Commissioner of Agriculture, Washington, D. C., who furnished me with several copies of the Report of the Commissioner of Agriculture, which contained many articles in relation to the cotton pest, compiled by Mr. Townsend Glover and other eminent entomologists, employed by the general government or by individual States. But knowing that there is no knowledge so valuable as that gained by experience, and wishing to secure the most extensive and reliable information on the cotton worm for the benefit of my readers, I sent, many months ago, to a large number of planters engaged in the culture of cotton, whose addresses I procured through the cotton factors of our city and other competent sources, a circular, stating the object of my enterprise, and containing the following

QUESTIONS:

How long have you been planting cotton?

How long is it since you first noticed the worm on your plantation?

Has the atmosphere anything to do with the coming of the worm? that is, are they more apt to appear in warm, or cold, wet, or dry seasons?

Are there any signs which may be taken as fore-runners of the worm?

What preventative should be used?

Do they leave their germs on the plantation from year to year?

Have you used arsenic? With what result?

Have you used Paris green? With what result?

What do you consider the best and most effective means of destroying the worms?

These requests for information were politely taken under consideration by many to whom they were sent, and were, after a time, answered as fully and perfectly as possible. As the experiences of the cotton planters in regard to the caterpillar, coming direct from the writers, may be deemed of more value than any extract that could be written from them, I give elsewhere a number of the letters as received, selecting those which I deem of most service, as most fully treating the subject under consideration.

In many cases I have had letters from planters in neighboring vicinities, when the sameness of the experiments and experiences made it unnecessary to give all the communications; while in other cases, the difference in the result of the same treatment on cotton crops adjoining each other have been so marked, that I regarded it as important to reproduce all information received.

HISTORY OF THE COTTON WORM.

The first appearance of these pests as destroyers of cotton was in 1800,

and there is little reason to doubt that they were entirely unknown until that time. In 1804 the crops were almost destroyed by them. A snow storm and frosts, more severe than usual, occurred during the following winter, but they were again found in 1805, though in smaller numbers. In 1825 they were spreading rapidly when they were destroyed by a storm. In 1826 they destroyed almost the entire crop. Their first appearance in this year was on the first of August, at St. Helena. Soon after every plantation on all the sea coast from New Orleans to North Carolina was infested, and by the 23d of the same month they had destroyed almost all the cotton leaves, but suddenly left the plant. The cause of their sudden disappearance was accounted for by the fact that the weather was unusually warm, and they were too much exposed to the rays of the sun to continue their depredations.

In 1838 the caterpillar appeared in August and was particularly destructive in Florida, where, in many counties, after destroying the entire foliage, they barked the limbs and stalks, and ate out bolls nearly grown. In 1839 they were less numerous and did little harm, but in 1840 they destroyed two-thirds of the entire cotton crop. From that time until 1852 it would seem that on every third year the cotton worm was more general in their appearance and more than ordinarily destructive. The same fact in regard to their visits being periodical has been observed and commented on ever since, but, as yet, there has been no satisfactory reason given for the occurance.

That the cotton worm moth is a migratory pest there can be little doubt, and, as it is capable of flying great distances, the remoteness of one cotton field from another affords no security to the crop. Mr. E. Richards of Cedar Keys, Florida, wrote some years ago a letter to the Agricultural Department in support of this story, which is often denied.

"The last of July, these caterpillars made their appearance in a small field of three or four acres of sea island cotton, planted on Way Key, an experiment to see if cotton could not be advantageously cultivated on the keys, no other cotton having been previously planted within *eighty miles* of them, but the whole crop was destroyed. The caterpillars at the same time were destroying the cotton in the interior of the country."

The habits of the cotton worm seem to have been very little studied in the section where its ravages do almost incalculable damage, but so far as its ravages are known, wherever they have appeared in Georgia or South Carolina, they almost invariably came from southward, and had committed ravages 30 or 40 miles off some weeks before making their appearance in the places named; the second and third broods of moths travelling farther and farther north, spreading ruin and devastation until killed by the frost. If this theory of northward migration be correct, so are the accounts we so frequently hear of their journeys in other directions from one cotton field to another, when in any instance they have exhausted the supply of their costly food. It is certain however that it was from these reported changes

of the base of operations, whether truthful or otherwise, that the cotton caterpillar first received the name of "army worm."

It is said also that these interesting insects have a partiality for "long staple" cotton, and that the moth in its flights will pass over a field of "short staple," to rest in a more remote one where the long-stapled dainty is growing.

HOW THEY LOOK.

The annual losses by the notorious cotton worm amounts to many millions of dollars, and in years of its extensive prevalence brings ruin to thousands, yet, even in the cotton growing sections, not one person out of every one hundred, could tell a cotton worm from the grub of the most harmless and beautiful butterfly.

Entomologists classify many insects for which the cotton plant furnishes food, but regard only one as the inveterate enemy of the plant. As a great confusion still exists about the habits and appearance of the true cotton caterpillar, (*Anomis xylenas*) many confounding it with the grass worm which usually makes its appearance about the same time, I give below a description of the real caterpillar which I copy *verbatum* from the "Report of the Entomologist," for 1867, prepared for the Agricultural Department, at Washington, by the distinguished Townsend Grover, than whom I could quote no higher or better informed authority on the subject.

"As false alarms about the appearance of the cotton worm in certain districts are frequently inserted in the Southern newspapers, by persons interested in the sale of cotton, when the worms seen in the fields are merely boll worms, grass worms, or some other comparatively harmless caterpiller, I will mention some distinguishing marks by which the cotton moth may be recognized in either the egg, caterpillar, chrysalis, or perfect state. In the first place, the egg of the cotton worm is round and very much flattened in form, and of a green color, whereas the egg of the boll worm moth is round, somewhat bluntish, conical in shape and of a yellow color. The egg of the cotton worm is mostly deposited on the leaf or branches, while the egg of the boll worm is usually placed in the so-called "ruffle" or envelope of the flower.

The caterpillar of the cotton worm has six pectoral or front feet, two anal and eight ventral, the two foremost of the ventral feet being *very small, apparently useless,* and not employed for grasping like the other six; while in the grass worm, the legs are all perfectly formed and used when creeping from leaf to leaf. Owing to this imperfection in the formation in the first pair of ventral feet, the cotton caterpillar always moves like a span worm or looper, that is, by alternately contracting and expanding its body, holding fast by means of its hind feet to the object on which it rests, while the head and fore-feet are extended as far as possible, the stalk or leaf being securely grasped by the pectoral feet, the hinder part and legs are

suddenly brought up to them, so that at every step the body assumes the shape of an arch; whereas the grass worm glides along by moving its feet alternately and gradually without raising the middle of its body from the leaf. The cotton worm has also a habit of doubling itself up suddenly when disturbed, and springing to a distance, but the grass worm merely rolls itself up somewhat like a snake when coiled. The cotton worm when about to change spins a very loose web or cocoon among or in the leaves or branches of the cotton plant or weeds infesting the field, at some distance from the ground. The grass worm, on the contrary, comes down from the plant it has fed on and retires under stones, loose earth, or buries itself in the ground before forming its cocoon. The perfect moth of the real cotton worm is much more angular and graceful in form, with the upper wings of a somewhat reddish or claret colored brown, and there is always a darker spot having a light center, more or less defined in the middle of these wings, while the under wings are of a dark ash color. The grass moth is much more clumsy in form, its upper wings being clouded and barred with dark and light grayish brown while the under wings are lighter colored.

Whether the cotton caterpillar feeds upon any other plants or not, I am unable to say, never having found it eating anything but cotton, and even when seen on weeds in the cotton fields, the worm has merely wandered away to find some suitable locality in which to spin its cocoon. Several cotton worms, kept for the purpose of experiment constantly refused to eat anything but cotton, although supplied daily with fresh leaves of all the weeds or plants in the neighborhood, and several actually starved to death rather than touch anything but cotton as food."

These worms appear in successive broods, and accomplish their transformations in a period of about twenty-eight days. Their growth and changes seem to depend in some degree on the condition of the atmosphere, moist warm weather favoring their rapid development, cold seasons having a contrary effect.

PREVENTIVES.

From the fact that the cotton moth is capable of making long flights, and is of migratory abilities and tendencies, some persons contend and have contended for years that the only way to "master the pest" is to destroy the moths before they have a chance to couple and reproduce, while others as positively assert that, "any attack made on the insect, while in the form of a moth is entirely useless," but if the parent can be destroyed, and there is no good reason to doubt that it can, it seems poor policy for the planter to wait for the children and grand-children, particularly when each generation is many millions in excess of its predecessor in point of numbers.

Among the many remedies recommended for the cotton moth, and the only artificial one which has been used at all advantageously, is the lighting of fires and lamps in the fields, which attract and destroy the miller.

But in order to use this means successfully it is necessary to ascertain precisely the time the first moths make their appearance, and set to work on their extermination at once. The moths must not have time to deposit their eggs, else their destruction is a matter of no value, as in from six to eight days, if the weather is moist and warm, their destructive progeny will be at work, and in a few days more tens of thousands of other moths, each bearing the embryo of destruction, will be ready to take the place of the first installment. If the moth is to be attacked, have your lamps and fires trimmed and ready to light the moment the first triangle shaped little mother of mischief makes her appearance, or, better still, light up and lie in wait for her.

Mr. J. G. G. Garrett, of Port Gibson, Mississippi, has patented an Insect Destroyer whose efficacy is vouched for by numbers of cotton planters, and farmers who have used it.

As my object is to place before cotton planters the best means, and every means, which are recommended after actual trial made with them, for the extermination of the cotton worm in any form, I deem it my duty to make the following extracts from a circular published by Mr. Garrett, March 11, 1878, particularly as the means of trying the experiment are within the reach of every cotton planter and farmer.

"Prepare a suitable number of stakes, sharpened at one end, so as to sit in the ground on the other nail, or otherwise secure a plank about eighteen inches long; upon the plank place a sheet-iron pan, or tray made of plank twelve or fifteen inches wide, eighteen inches long, and two inches deep; secure a block in the center of the pan two inches thick; secure a lantern on the block by tying down to nails at each end of the plank, or, what is cheaper, a socket in the center of the block, to hold the half of a star candle, with a lamp chimney to protect the candle or lamp; place four pegs around the chimney to hold it in place. About equal portions of molasses and water, with a little vinegar, or other attractive bait, is poured into the pan. The molasses and vinegar must be protected from the sun and rain with a lid or cover which will turn off rain-water, with openings so that the insects can get into the molasses and vinegar while the cover is on. The cover only to be removed when lighting up the field, orchard or garden. The cover may be made by putting two planks together, like a roof of a house, but not so steep, with the ends open, so that the insects can get into the molasses and vinegar while the cover is on. The insects are not only attracted by the light, and destroyed, but are also attracted by the molasses and vinegar, and caught in great numbers without a light, and while the cover is on. The molasses and vinegar must be kept to a proper consistency by adding a little water and stiring it when necessary. Strain out the insects, and return the molasses and vinegar when necessary.

To protect the cotton plant from the ravages of the catterpillar, boll worm, and other insects, use one insect destroyer for about every two acres.

Commence using them about the first of June; light up the field once or twice each week in June, and two or three times each week in July and August. By doing so you destroy the first broods of flies, and prevent them from increasing."

While on the subject of preventives, of which over a dozen alleged ones have been spoken of in the correspondence I have received, this, of using fires attract and destroy the moth before it has had time to deposit its eggs, has been frequently recommended, as in the letter of Mr. J. V. Tevier, of Ashwod, La., which I give in another place, the *second* letter, and which, owing to his long experience is deserving of particular attention.

JUTE AS A PREVENTIVE.

In speaking of jute, *corchorus capsularus*, as a preventive of the cotton worm when sown around the cotton field or in spaces between the rows, I think it advisable, in the first place, to state that jute is a profitable crop, and finds as ready and as advantageous a market as the fleecy staple itself.

The plant is a native of Hindoostan, and has been used for ages in textile fabrics throughout Asia and the islands of the Indian Ocean, where the natives, although without the help of ingenious machinery for its manipulation, make many really beautiful cloths, in looms of the most primative description, from its hand prepared fibers.

This filamentous plant was very little known, even in Europe, until the war of secession caused an interruption in the agricultural pursuits of the South and produced, in consequence, a scarcity of cotton, when the British trade, which long understood the value of the plant, took advantage of the favorable opportunity to introduce and disseminate jute as a substitute for cotton. Companies were formed for the promotion of its culture, etc., and hundreds of pounds sterling expended on trials of its adaptability to produce cloths which had been previously wrought only from cotton or flax; and, although experiments and the experiences of nearly fourteen years have proved conclusively that jute can never take the place of cotton, they have also proved that jute is preferable to cotton in the construction of many articles of the greatest commercial importance, and that a mixture of jute with wool, hemp, flax, or cotton, enables the manufacturer to give to the markets of the world, many cloths equal in all respects to those heretofore made from one of these staples without mixture, at a cost comparatively trifling.

In Dundee, Scotland, there are over one hundred mills, employing thousands of hands, where jute is wrought into numerous and various goods; indeed that city is the center of jute specialties, and in every other portion of Europe, particularly France, the staple is used largely, while the American trade pays annually several millions for raw and manufactured jute imported from various points in British India.

I make these statements merely to impress on the cotton planters of the South, the fact that while other preventives, or destroyers of the cotton

caterpillar cost considerably in time and money to apply them, and in the end merely saves, wholly or in some degree, the cotton field, to plant jute in or around the field costs but a trifle more per acre, and returns not only protection to the cotton, but also a crop as profitable as the one it protects. The experiment is certainly worth a trial.

In support of this theory, which many contend is infalable, I will quote detached portions from an article prepared by Emile Lefranc, a member of the "Southern Rami Planting Association," quoted by the Agricultural Department, at Washington. Speaking of jute, he says:

"To obtain good fibre-crops the land must be elevated, rich, and well drained, as in India; to raise seed, lowlands may be used provided that favorable weather allows sowing, and enables the growing plants to keep above the points of overflow. However, when the growth is fully started, water is not to be feared, so long as the tips remain above the surface of submersion.

In the first place, jute is sown broadcast; in the second in drills five feet apart. That interval is to facilitate the branching, and at the same time the destruction by ploughing of the tall weeds which generally occupy low lands. In both methods the soil must be well prepared as for ramie; ploughed as deep as possible in January or February, then left exposed to atmospherical influences, until the planting period. That period commences with April and terminates with June, in monthly succession. To prepare for sowing, a second plowing is required and as fine a harrowing as can be effected. The "circular pulverizer," applied before the harrow shortens the labor. Then the sowing for fibre crop is performed broad-cast with the Calhoun sower. With that instrument costing eight or ten dollars, a man can sow ten acres of jute per day. The quantity of seed required for each acre is from 12 to 15 pounds.

Louisiana seems to be particularly congenial to the plant.

Texas and Florida have also made successful experiments.

In the field planted broadcast no parasite can resist the vigorous and absorbing influence of the jute, even the hardy and noxious gramineal plant called "coco" in Louisiana is destroyed after two years of broadcast cultivation.

Another peculiar advantage of jute planting, is the antagonistic influence it exerts over insects, especially over the lepidoptera tribe which generates the caterpillar. It having been stated in some reports of the Department of Agriculture that cotton fields surrounded by jute plantations were respected by the devouring worms, the director of the Rami Planting Association made special experiments to test the reported facts. Three different fields planted with cotton were belted with jute. None of them were visited by the caterpillar while the cotton of adjacent plantations was destroyed by the insect. It was observed that flies and butterflies kept away from jute fields especially at the blossoming period. The peculiar

odor of the flower, and the bitter exudation of the leaves seem to be strongly repulsive to them if not poisonous. So important a fact deserves to be demonstrated on a larger scale. It would cost but little to plant belts of jute around the regular cotton plantations which have heretofore been invaded by these injurious insects."

Dr. Landry, of New Orleans, after observing the influence of jute growth on insects writes: "I have seen on the 1st of October, a cotton field in full foliage, flowers and bolls, without a single insect bite. That cotton was surrounded by a jute growth. All the other cotton fields, far and around were more or less devastated by worms.

If this fact does not conclusively prove the protective influence of jute over cotton it at least contains a great presumption in favor of the affirmative, as the emanations of the jute are injurious to insects."

I might quote many other high authorities, but hope what has been said will be sufficient to induce our planters to give jute a fair trial as a preventive for the cotton catterpillar.

DESTROYERS OF THE COTTON WORM.

If the cotton moth pays a visit to the cotton field it is but for the destruction of the plant, and in a few days the results of the unwelcome call will be exhibited in the shape of myriads of crawling, voracious worms, before whose inroads green leaves and buds disappear, the hopes of the planter fall prostrate, the laborer in utter helplessness folds his hands, tradesmen stand idle, the manufacturer looks despondingly on his unused spindles, and commerce in general feels depressed and listless. If the cotton worm works, thousands stand idle; if it eats, tens of thousand want bread; there is no computing its power to inflict misery; there can be no correct estimate made of the evils its devastations work; nor can even the most pains-taking statistician make more than an approximate valuation of the millions of dollars worth consumed annually by this insatiate pest. Want follows in its path; hunger, despondency and gloom are its followers.

The Agricultural Department at Washington, impressed with the magnitude and importance of the success or failure of the cotton crop to the country at large, after investigating the matter as thoroughly as their extensive opportunities permitted, came to the conclusion that the only reliable information respecting the uses of poisons as cotton worm destroyers must be given, "by the planters themselves, and their own experience can best render practicable and efficient the means employed," addressed a circular "on a subject, the importence of which will be generally acknowledged, early in the fall, 1873, to the regular corps of department correspondents in the cotton-growing States," containing these concluding remarks and questions:

"Numerous correspondents have of late been experimenting with a mixture of Paris green and flour or plaster, dusted on the plants when wet

with dew—a remedy which has proved very efficient against the Colorada potato beetle and other insects. Some report the remedy effectual against the cotton caterpillar, while others declare it is of no value whatever; others still hesitate to try it for fear of poisoning. It is of the uttermost importance that the facts in the experience of planters the present season should be carefully reported, showing the quality and proportions of material used, the methods and frequency of its application, and the observed results, that a thorough test may be made of its value or worthlessness. The answers of the following questions is therefore requested:

1. What is the result of your experience, or observations as to the efficacy of Paris green or other arsenical compounds, mixed with flour or plaster, for the destruction of the cotton caterpillar?

2. In what proportions, and in what mode, time, and frequency of application have your experiments been made?

3. Have any injurious effects of the poison been observed, either upon the plant or the soil, or in human poisoning in its application, or in the destruction of beneficial insects, as bees, etc.?

4. Have you used any other remedies or means of extirpation, such as fires or torches in the fields, to destroy the perfect moths on their first appearance, and with what success?"

Returns were received from one hundred and seventy counties in the cotton growing States, Alabama and Texas sending the most numerous and complete answers. Of seventy returns reporting actual experiment, at least four-fifths declared either partial or full success of applications of Paris-green or other arsenical compounds.

From the mass of evidence in relation to the compound known as Paris-green, for and against, the Department drew these

CONCLUSIONS: "The use of Paris-green, when pure and unadultrated, mixed with flour in the proportion of one part of Paris green to 25 to 30 parts of flour, is of utility, and in many cases has saved the crops; that in many instances when the Paris green has failed it has been attributed to improper use or using a spurious article."

These opinions do not differ in any essential point from those expressed by many who have written to me on the same subject; and there is every reason why planters should give Paris green, the pure and genuine article, a trial with every assurance of very beneficial results, if properly and thoroughly applied and in the right season.

Some planters who have favored me with replies, say that they have almost cleared their cotton fields of the worms, by ploughing between the rows with pine brush fastened to the swingle tree which brushes the caterpillar off the plants on to the ground, where they are either turned under the earth, or scorched to death before they are able to again ascend the plant. Others recommend the use of kerosine oil, cresylic soap, salt water, and many other applications the use of which for many reasons would seem impracticable.

VIRGINIA POINT, TEXAS, *March 20th*, 1878.

TO J. CURTIS WALDO, 46 CAMP STREET, *New Orleans:* Your circular letter of 1st of December last, has just been placed in my hands, and but little time is left me to reply to your several questions. I have planted cotton (both long and short staple) over thirty-five years in this state. For the first ten years of this time the worms made their appearance about every third year sooner or later in the season, doing more or less damage to the cotton crops. In 1846 not more than one *tenth* of an ordinary crop was made in South Eastern Texas. All plantations in that year fared alike in this portion of our State.

The worms are generally worse in wet seasons. The cotton moth will locate about the center of the field in the heaviest cotton and will spread from that point to the borders, though the last year (the worst in any experinece since 1846), they enfiladed the crops in the season of a severe drouth, four broods of worms followed in quick succession and those who used *no poison* in this section gathered but little cotton. An unfailing sign of their first appearance is the sight of the moth (distinctly marked and differing from all other millers), among the cotton plants or in the grass or weeds adjacent. There is no known or well established method of destroying the moth, while on the wing, unless it is by fire, lights properly adjusted to attract them in the night time and drown them in coal oil, tar or molasses and vinegar. In this connection I may here refer to the prospectus or circular of Mr. E. H. Fortand of Flatonia in this State, who claims to have invented a complete insect annihilator of the winged tribe, by means of movable torches, accompanied with traps filled with oil into which the unwary insect falls. He has a patent issued to him in October last, but yet lacking a full and fair test.

When the worm webs up on the cotton plant it falls upon the ground and by means of a *plixus*, augur or gimlet shaped, it bores its hiding place in the earth and in a comatose state, awaits the season of molting, when it bursts its shell, spreads its wings and goes forth on its destructive mission.

I have used every formula of compound, designed for its destruction and especially arsenic with many combinations and have never failed to kill the *cotton plant as well as the worm.* There are some, who claim to have used the powder or arsenic of commerce with good results.

Paris green will kill the worm and save the plant—but it is very expensive and often much adulterated. It was my misfortune in 1873 to lose 150 acres of sea island cotton at this place, by purchasing of a druggist of Galveston a spurious article of Paris green. I brought suit for damages, but a wise judge drove me from the portals of justice with the cruel sentence of *caveat emptor.*

To your last inquiry I have no hesitation in affirming after full and repeated experiments, with the "Texas Cotton Worm Destroyer," that it is the cheapest and most effective agent for the destruction of the cotton

worm, when applied according to printed instructions, pasted upon each package.

The success of this preparation is due to Messrs. Preston and Robira, druggists of the city of Galveston, to whom all honor and credit should be accorded for their efforts in this direction.

All that remains to be accomplished to cheapen and to bring their preparation into general requisition is the discovery of a more suitable mechanical contrivance to lessen the expense of its application. The hand pumps, sold with their worm poison, can be successfully used, but require too large an expenditure for labor. Surely through the inventive genius of some of our master mechanics or some skillful planter, such a contrivance will not be long wanting, if not already in the artificer's hands.

Respectfully,

WILLIAM I. JONES.

I here insert Mr. J. V. Tevier's letter, a cotton planter of thirty-seven years standing.

ASHWOOD, LA., *Feb.* 20, 1878.

J. CURTIS WALDO, ESQ.

DEAR SIR,—Your two favors to hand: they were delayed on the route. I will cheerfully comply with your request, and give you such information as I can in regard to the worms, etc., and subject to such corrections in the style of writing as you may think proper.

I have been planting cotton *thirty-seven* years. My first recollection of the appearance of the worms was in 1844, when they appeared in this parish, Tensas, and done a great deal of damage to the cotton crop. They also appeared here in 1846 and were very destructive. They are more apt to appear in warm wet seasons, and are not so destructive in dry hot weather. The first indication of their coming is the flies, which are to be seen in the cotton fields.

I have always been under the impression that the best preventive was to clear up the land well, and to cut and burn the stalks, for I am satisfied that their germs are left in the stalks of the cotton, and by placing lights in cotton fields of nights, about fifty or sixty yards apart, beginning about the middle of August, and continuing to the first of October, would in my opinion exterminate the flies. The flies congregate about a light of nights, and their destruction makes the coming worm an impossibility.

I have never used arsenic or Paris green to destroy the worms, cannot therefore state as regard their efficacy.

Yours, very respectfully,

J. V. TEVIER.

MILTENBURG PLANTATION, BAYOU RAPIDES, *Dec. 20th*, 1877.

MR. J. CURTIS WALDO, *New Orleans:*

DEAR SIR,—Your communication of the first instant came duly to hand

and I regret that press of business has prevented me from giving you an earlier reply; yet hope this may reach you in time to suit your purpose if you should find anything worth using in it.

ANSWERS TO QUESTIONS.

1st. I have been planting on my own account since 1866, was raised on a cotton plantation and have closely observed its culture, growth, etc., since early youth.

2nd. The earliest time that I remember to have seen the worm destroy the cotton crops was between 1846 and 1848, but I know they had frequently done so before.

3d. The conditions of the atmosphere has nothing to do with the production of the worms *directly*, still the weather has *indirectly* a very decided influence upon their progress in this way; when the leaves of the cotton plant become tough and sapless, in which condition the worms make but slow progress in eating them; whereas in wet seasons the plant is juicy, succulent and tender, and fields are swept away in a few hours. This then in my opinion is the only bearing the weather has upon the questions, that it increases or lessens the edibility of the plant. As to actual production or generation of the worms I don't believe the atmosphere has anything to do with it, except in so far as a very cold and protracted winter may destroy the chrysalis deposited in the ground.

4th. There are no signs which may be taken as forerunners of the worms, except the appearance of the *first crop* of worms, which are very different (in appearance) from those that eat up the crop.

5th. The best preventive, in my opinion, would be *deep winter* ploughing. This is only hypothetical or rather theoretical.

Your sixth question is answered in this my fifth answer, that is, the chrysalis is deposited in the ground.

7th. I have used arsenic with perfect success. There are many different modes of application. Some dust it upon the cotton plants through seives, having first mixed it with some cheap article, such as fine earth or clay, with the addition of some glutinous substance, such as flour, shorts, shipstuff, etc., etc. But to all these modes of application there are many serious objections, which I suppose it is unnecessary to state here.

I, with many others, apply the arsenic suspended (as it is insoluble) in water and believe this to be the speediest, cheapest and most efficacious method of using it.

8th. Have used Paris green in the same manner as the arsenic with as good results, but prefer the latter on account of its cheapness.

9th. I consider the application of Paris green, or arsenic, the most efficacious means of destroying the worm.

I have now answered all your questions as clearly and concisely as I could well do in the short space allotted to me, and yet there are many

important points connected with the subject upon which I might say much more, were it not that I fear in doing so I might too far trespass upon your patience. In conclusion, therefore, I beg to make a few suggestions which I feel the importance of the subject demands.

In the first place the natural history of the cotton caterpillar is very little understood, and while it is so we are bound to remain in ignorance of the best means of their universal destruction, which should be the end aimed at.

Would it not be expedient, as well as profitable, for those States that suffer such enormous losses from the depredations of the caterpillars to employ an experienced and competent entomologist to investigate thoroughly the natural history, habits, etc., etc., of this great enemy of the cotton plant? I am satisfied that until such researches are made we will only be groping in the dark and not likely, for a long time, to arrive at satisfactory conclusions.

This I trust you will strenuously urge in your forthcoming work.

I will not trouble you farther only hoping my answers to your questions may prove satisfactory, and would gladly give any other information I might possess on the subject. I will perhaps be in New Orleans in January, when, if you desire it, I can give you my views more at length on the subject.

Yours, very respectfully,

SMITH GORDON.

ALEXANDRIA, *Dec. 21st*, 1877.

J. CURTIS WALDO, ESQ., *New Orleans, La.:*

DEAR SIR,—Press of business engagements must plead my excuse for not having sooner answered your circular letter of the 1st instant.

I am not sufficiently versed in the science of entomology to answer all of your questions with any degree of accuracy, so I will confine myself to facts of which I am fully cognizant and which have come under my own personal observation.

I was born and raised on a cotton plantation and have been engaged in its culture for more than twenty years.

It is impossible for me to say when I first noticed the worms, my recollection of them extends to my early childhood, and I presume that they are, in this latitude, cœval with the cotton plant itself. It has been generally believed that wet seasons were much more apt to produce the worms than dry ones, but this does not accord with my own observations; for I have seen them in all the might of their destruction in dry as well as wet seasons, whilst on the other hand in some of our wettest summers the cotton fields were exceptionally clear of them.

Until within a few years the cotton planter has felt that he was powerless to make any defence against the ravages of these voracious little pests, but thanks to the inventive resources of man, a remedy has been discovered, absolutely efficacious and easily within the reach of every one.

I have experimented with Paris green during three seasons, with the most

marked and beneficial results. I have used it in the powdered state, mixing it with flour, and also in the liquid form, using water as a solvent, with perfect success with both methods; but on the grounds of economy and rapidity of application, I prefer the latter, where water is readily accessible.

My manner of using the Paris green is as follows:

I take a heaping teaspoonful and mix directly into the watering pot, holding two gallons, being careful to keep the water well stirred until I hand it to the laborer, generally mounted, and start him at a slow trot, to sprinkling, going once or twice to the row, as the cotton is larger or smaller.

I have used the ordinary garden watering pot, but this can be much improved upon; the pot itself should be covered over entirely, with a neck to insert the nozzle of a funnel, this will prevent the wastage of material which occurs with the ordinary open pot, and then the sprinkler should be made much larger, perforated with a number of small holes. It would be prudent before going earnestly to work with Paris green to arrive at the proper quantity to be used, by experimenting on a small scale, as it seems not to be of uniform strength.

I will close by giving you the results of my operations this year. In order to arrive definitely at the benefits derived from Paris green, and to convince the sceptical, I would here and there at random skip a row or two, leaving them to their fate; in every instance the rows not sprinkled were devoured, whilst the surrounding cotton was green and fresh; when I went to picking I had two of these rows picked and weighed the cotton from them—80 pounds, then picked two contiguous rows on which the Paris green had been applied—result 175 pounds, and this was about the difference on my place generally. I made but one application, if a second had been made the difference would have been even greater. I estimate the cost of saving a crop at not more than $1,25 to the acre, making two applications—with arsenic the cost would be much less, and I am inclined to think that arsenic is as effective as Paris green, but I do not know from my own experience,not having used it sufficiently to form an opinion.

Wishing a happy and successful issue to the work you have undertaken,

I am yours, truly,

JNO. H. PRESCOTT.

GABION, GALVESTON, CO., TEXAS, *March 20th*, 1878.

J. CURTIS WALDO, ESQ.

DEAR SIR,—I am in receipt of your circular requesting me to give my experience in raising cotton, destroying cotton worms, etc., etc., which I take pleasure in doing, as far as I am able, hoping it will be of some benefit to some of my brother farmers. I have been planting cotton since 1866. I do not think since then one season has passed that the worms have not made their appearance in my cotton field. For several years they came too late to do very much harm, but in 1871 they completely destroyed my whole crop, they so completely destroyed it that it did not pay to pick what was left. But since then I have succeeded every year in saving my crop with poison. The only kind that I have succeeded with is the "Texas Cotton Worm Destroyer" which I am perfectly satisfied from practical experience is the very best known preparation in the market. It is far superior to Paris green or any other poison that I have used or seen used, but the great secret in using the poison is that it should be applied to the plant as soon as the worms are hatched and are about the size of a hair. Damp cloudy weather and cool nights are more favorable for them than dry weather. The best sign that may be taken as a forerunner of them is a great quantity of moths flying around the field late in the evening; they seem to deposit their eggs then, and die or disappear, the worm commences hatching out some eight or ten days afterwards. A cheap mode has been adopted for destroying the moth, which consists of a pan of viscid water which is placed upon stakes in the cotton field at suitable distances apart, a block of wood is placed in the center of each pan, upon

which is placed a lighted glass lantern. The moths being attracted by the light dash against it and fall into the pan and are destroyed before depositing their eggs upon the tender leaves of the plants. I have never used the lantern on my plantation, the above described poison did the work so completely, that I thought it unnecessary to try any other remedy, but I have no doubt that it will prove beneficial if properly used.

Hoping some of the above items may be of benefit to the cotton growers,

I remain, very respectfully,

A. J. JOHNSON.

REFUGE LANDING, MISS., *January 13th*, 1878.

MR. J. CURTIS WALDO, *New Orleans, La.:*

DEAR SIR,—In answer to your circular of December 1st, would say I have planted cotton since 1865. I have had worms on my cotton every year since, except 1870. They have never done me serious injury except in hot damp seasons. They have generally appeared about middle of July, and when injury has resulted from them, it has been when they have increased to the third crop, about 15th of August to the 10th of September. I can form no idea as to whether we will have them or not any season, their appearance being the first indication.

I have used Paris green and the "Texas Cotton Worm Destroyer," both are serviceable. I like the "Texas Cotton Worm Destroyer" best, it is much cheaper and more easily prepared for use. It is however almost impossible to protect a large crop with either, the time is so short, they destroy it so rapidly and you must have dry weather for either to be effective.

Very respectfully,

J. W. HARROW.

NORTH BEND, CHENEYVILLE, PARISH RAPIDES, LA., *Dec. 17th*, 1877.

J. CURTIS WALDO, ESQ.

DEAR SIR,—Your communication has been received and in reply I would state that I have been planting cotton for 30 years, and the first season that I remember to have seen the worms, was in the year 1840. The caterpillar requires a wet season to accumulate, as such weather is destructive to their natural enemies, the ant, and also an insect called the Ichneuman, which feeds ravenously upon the cotton worm. After the butterfly, the first signs of the approach of the cotton worm is in the shape of a green worm, which is generally called the fore runner. I think they leave the germ on the plantation, though they are capable of migrating. I have used arsenic in dry weather with good results, but if a rain should follow the application, in a few hours it will destroy all good effect. I have also used the Paris green to a considerable extent, this is the most popular remedy, but I have found it non-effectual under continual rain. The remedy should be used when the first worm is seen. I have during the past season used the arsenic and Paris green both in solution. The great difficulty lies in applying the poison, as it should be done by machinery, so that the man or horse would not come in contact with the poison. I think a light cart could be so constructed as to sprinkle 3 rows at a time and as lightly as desired. By this a cart could be made to sprinkle 30 acres in a day.

I think Paris green mixed with flour and applied with a sifter is the most effectual and lasting manner of applying the poison, though of course it is the most expensive.

If the poison was used when the fore runner makes his appearance, and every planter could be forced to use the poison, *then* I have no doubt but the worm could be entirely exterminated, but where one man uses the remedy and his neighbor does not, it keeps up the presence of the worm, ready to devour several times during the season.

Yours, respectfully,

WM. V. KEARY.

[Since we commenced investigating the question of "How to destroy the Cotton Worm?" we have received a copy of a pamphlet, which we think so appropriate, that we present it entire to our readers.]

THE COTTON WORM.

The cotton plant furnishes food for many insects. More than one dozen are enumerated, classified and described in the works of entomologists. Most of these insects are harmless, or very nearly so. Two alone are regarded as destructive; of these one is so devastating as to acquire the names of the "cotton army worm," "the cotton caterpillar," "the cotton worm (*Noctua zylina*)." This little insect comes like an army of destroying angels. It comes almost as suddenly as a thief in the night. The planter who retired to dreams of plenty and content, rises to behold the vanguard of destruction. He wakes to witness the disappointment of his hopes, the devastation of all for which he has labored. The work of one year and the comforts of the next are devoured by this worm in a week, and where there were hopes of plenty, there is the sorrow of want. This to the planter. The merchant, the tradesman, and the manufacturer, all suffer because of the insatiate maw of this little monster. The cotton worm can, with his feeble strength, stop the mills of Manchester. When he eats, the operatives of England and the planters of America want. There are no data by which the actual amount of his destruction can be measured. The estimate is that in some seasons he has destroyed as much as twenty millions of dollars' worth of growing cotton. It is our business to make known the means whereby this enemy may be destroyed, and the calamity it entails averted.

ITS HISTORY.

Solomon has said that there is nothing new under the sun; but if the cotton worm is older than the nineteenth century our modern Solomons knew nothing of it. Dr. Cuper's authority says, that the first appearance of these worms as destroyers of cotton was in the year 1800, and that in 1804 the crops were almost destroyed by them. Happily a snow-storm occurred during the following winter, and they were almost entirely destroyed. It required a number of years before they became so numerous as to be very destructive.

In 1825, they are said to have been again destroyed by a storm, but this is somewhat doubtful, as during the next year they were very destructive.

The worm does not appear in all portions of the cotton-growing district during the season, nor are his visits made with any degree of regularity.

It is probable that a moist season has much to do with developing the eggs that were laid by the fly which has survived from the previous year.

And it is well known that a very hot sun drives them to seek shade and shelter. It is generally regarded as certain that the moth which lays the egg survives the winter, especially if it is at all mild.

THE DESTROYER.

Many means have been used to destroy these worms before their increase in sufficient numbers to be seriously injurious. Almost every planter—certainly every old planter—can call to mind the torches that were devised to attract the moth, the flags that were used to scare him, and the plates of molasses and vinegar that were devised to delude him. All these and many more proved worthless.

And it was found that any attack made on the insect, while in the form of a moth, was utterly useless. There are usually three broods of the worm in a single season. The first brood is small in numbers, the second larger, and the third innumerable. Of course the proper point of attack is on the first brood, for if these die childless, neither their children nor their grandchildren will appear to carry devastation and dismay to the planter.

The problem then presented is to prepare a poison which can be applied so that the worm must eat it, a poison which can be applied with safety by the ignorant and careless field-hand without danger to himself or injury to the plant. The poison, whatever it is, must be certain—no mistake can be remedied, for while the planter is inquiring for a good medicine with which to replace the bad, the worms are devouring his crop and laying his fields desolate. It must be such a poison as can be applied to all parts of the plant on which the worm feeds, because if it is not so applied he may dine to repletion on the harmless part, avoiding the less pleasant and fatal portion. It must be an article that will not injure the plant, nor spoil the staple in the open boll. The poison must be cheap, else it will cost a large portion of the value of the cotton saved to preserve it. The first article of poison applied to the destruction of the cotton worm was Paris-green. It seems to have been used whimsically and without any previous scientific study. Paris-green is a poison—if a man eats it he dies, and if a woman eats it she dies also. This seems to have been the reflection that prompted it use. The objections to its use are many—and they are fatal objections.

Paris-green is a pigment which is made in several different ways; or rather, to speak more precisely, there are several articles known to commerce as Paris-green, which cannot be distinguished from one another except by practical chemists. One of these compounds is a rank poison; if the worm eats it he will surely die—the others are harmless. A case in point occurred with Judge Jones of Virginia Point, Galveston County, Texas. He purchased a quantity of Paris-green and applied it to a field of sea-island cotton with good results. The following year he bought what he supposed to be a similar article, and he certainly did buy a Paris-green,

but it was harmless as a bowl of bread and milk. The worms were as lively and lusty after dining upon it as before. His field was devastated, and his crop destroyed. Twelve thousand dollars' loss was the result of the substitution of one sort of Paris-green for another. A second objection to Paris-green is that it cannot be dissolved in water. Flour, gypsum, plaster and other articles, have been used as a vehicle for its application; but they are all uncertain in their results, for unless the worm eats of the actual poison, he may dine all day on the plaster, flour and gypsum, without being the worse for it. A very small quantity of the poison is sufficient to kill the worm, but he must actually eat that portion or else he is not harmed by it; to be effective, the poison must be dissolved and diluted, not mixed. A mixture of Paris-green and any other substance is not certain to be effective in killing the worm, and is not likely to be injurious to the plant, because it falls in clots and splotches. In some places there is so much as to dry and shrivel the leaf, and in some not enough to harm the worm. There is another objection to the use of any poison not diluted in water, clots of the green poison falling on the boll are likely to discolor the staple, and are certain to injure the ginner, being thrown out in the form of dust, and taken into his lungs with the air that he breathes. Should he happen to have a cut or sore hand, dangerous consequences might happen to the picker or ginner from contact with the poison.

Another objection to the use of Paris-green is its cost.

A MORE CERTAIN REMEDY.

In presenting the Texas Cotton Worm Destroyer, discovered and patented by J. D. Braman and A. Robira, we make no claim to mystery, nor any effort at concealment. The chemicals of which it is composed are fully recited in the official papers of the patent office, and open to the access of every man who desires to make the investigation. It is a salt of arsenic which readily dissolves in cold water. There are other salts of arsenic known to all chemists, which dissolve in boiling water, but the objections to their use are the greater danger resulting from increased manipulation by ignorant persons, and the possibility of chemical changes resulting from the vessel in which it is boiled, and other causes.

The ease with which it is applied is such that the most ignorant plantation-hand cannot make a mistake after having once seen it done. And the directions are so simple that any man who can read needs no further explanation. While it is no part of our desire to decry the use of Paris-green, which will when properly applied certainly kill the worm, we do claim to have found a remedy equally effectual, and entirely free from the danger which accompanies the use of that article. And no better evidence of the danger attending the use of Paris-green can be desired than the *printed* directions which accompany the packages of Paris-green sent out for the use of planters. We copy them precisely as they are published:

Great care is required in mixing PARIS GREEN with the materials prepared for the extermination of the COTTON WORM, or POTATO BUG.

The Green is very poisonous; and as it is a fine powder, if it flies upon the skin it will make very sore any scratch or wound which may be there.

Great care must be taken to *avoid inhaling* the Green, as it will produce *nausea,* and *giddiness* of the head, etc.

When mixing the Green with the other materials, or sprinkling the compound, *put a handkerchief over the mouth and nose,* and after the work is done, the clothing should be thoroughly shaken (still keeping on the handkerchief), and the *entire body carefully washed in cold water.*

In making the Compound, add small quantities at a time of the Paris Green, and thoroughly incorporate the same with the other materials.

When the Compound is applied, and in a dry state, with a sprinkler, to the *Cotton* or *Potato Plant,* be careful to go *with* the wind and not *against* it, so as to avoid the Powder as much as possible.

If applied in a liquid form, do not permit any vessel used for the Mixture to be used for any other purpose, *until very thoroughly* washed.

If any inconvenience arises from inhaling any of the Green or Compound (and it is not thought necessary to employ a doctor), drink *milk* very freely; and for sores, or irritated skin, apply Oxide of Iron in the form of a salve.

Any planter will at once perceive the difficulty of inducing his hands to take all these precautions, and the danger of such an agent in the hands of the ignorant and careless.

ALL THAT HE HAS TO DO WITH THE COTTON WORM DESTROYER

Is to stir four ounces of the mixture into about forty gallons of water, and apply it to an acre of cotton with a common watering-pot, or any of the simple machines which have been devised for sprinkling fields, streets, etc. The cost of effectually preserving an acre of cotton does not exceed 12½ cts. a perfectly inconsiderable amount when the certainty of its results and the great saving that results from its use are remembered. Having shown the great calamities which follow in the track of the cotton worm, and the cheapness with which the Texas Cotton Worm Destroyer can be applied, it remains for us but to show the CERTAINTY OF THE RESULT.

In doing this, we shall have recourse to no argument founded on philosophical probabilities, we shall present nothing but the actual results which have ensued from the application of the TEXAS COTTON WORM DESTROYER to fields of growing cotton by actual planters, well-known and respectable gentlemen, whose words are received as current coin in the communities in which they live. We do this because we recognize the truth of that homely axiom which says that "the proof of the pudding is in the eating of it." The proof of the Texas Cotton Worm Destroyer is in the eating of it by the worms.

THE EXPERIENCE OF PLANTERS—WHAT THE DESTROYER DID AT BRYAN.

BRYAN, *Sept. 14th*, 1874.

Capt. H. B. STODDARD:

SIR,—It affords me pleasure to state that having used the "Texas Cotton Worm Destroyer" on my cotton crop, I find it to be just the thing to kill the worms, and can assure parties interested in its use that it does not affect any kind of stock. I applied with one of your fountain pumps; and should it be necessary another year, shall apply the "destroyer" again.

Yours truly,

P. M. HARGRAVE.

It is worth while to remark that the certificates and letters which we are presenting do not emanate from unknown and irresponsible persons, but from well-known and intelligent gentlemen, of whom any man can inquire by the expenditure of a single postal-card.

IT KNOCKS THEM HIGH AS A KITE.

WATERVILLE, WARTON CO., TEXAS.
Aug. 20th, 1874.

Messrs. PRESTON & ROBIRA:

SIRS,—I have used your compound for the destruction of the cotton worm. It killed the worms to my entire satisfaction. I used four ounces in 42 gallons of water and it knocked the worms higher than a kite—no injury to the plants—worms nearly all dead in 15 hours after applying it. Cotton planters need have no further dread of the worm. The Texas Worm Destroyer does the work.

HENRY I. SCHLEY.

GALVESTON, *Aug. 26th*, 1874.

Messrs. PRESTON & ROBIRA:

GENTLEMEN,—Having made a test of your worm poison, I am fully convinced that it is effective, and one of the best preparations yet discovered for the destruction of the cotton caterpillar.

Respectfully yours, etc.,

E. L. RUGELEY.

WHAT IT DID.

MILTON PARKER,
W. H. FLIPPEN.

OFFICE of PARKER & FLIPPEN.
Bankers & Commission Merchants.

BRYAN, TEXAS, *Aug. 14th*, 1874.

Messrs. PRESTON & ROBIRA, *Galveston:*

GENTLEMEN,—On Thursday last I applied the Texas Worm Destroyer to about 20 acres of cotton on the Parker & Flippen place, some eight miles

from Bryan. On Saturday, I visited the place and found one field free from worms, on the remainder some two or three worms were on the stock, but not eating.

Yours truly,

H. B. STODDARD.

GALVESTON, *Aug.* 19*th*, 1874.

We, the undersigned, hereby certify that we are personally acquainted with Capt. H. B. Stoddard, and know him to be careful and truthful, and we have implicit confidence in the statement he has made.

BRAMAN PURVIANCE & CO.,
B. B. RICHARDSON.

It is proper to remark that these worms were, as the doctors would say, in *articulo mortis*, and that the next day they were dead as door nails.

AN ACCURATE STATEMENT.

RETRIEVE PLANTATION, BRAZORIA CO., TEXAS,
September 14*th*, 1874.

Messrs. BALL, HUTCHINGS & CO.,

DEAR SIRS,—We have had very heavy rains for a week, terminating on Friday last. At the commencement of which the worm appeared. We were only able to apply the poison to a limited number of acres, between showers, but I am happy to say, proving, without a doubt, the efficacy of Robira's patent.

I will relate an instance of its success; one party applied it to five acres the day before the rains set in, it is now in perfect preservation, while the cotton to which it was not applied is entirely eaten up and up to the very row. Had it not been for the rains I could have saved it all. I have twenty acres in cotton which was not affected by the worm in August. I applied it down here on the few acres of cotton on which any leaf remained, with equal success, which has demonstrated that rain will not wash it off. In my application I increased the amount to 12 oz. in 84 gallons of water, and applied it to an acre without injury to the cotton.

I remain, very truly,

T. LYNCH HAMILTON.

It will be observed that in this experiment the compound was applied to the third brood of worms, and preserved the cotton despite the injury it had received from the first two broods.

AN ARRAY OF NAMES.

GALVESTON, TEXAS, *Sept.* 14*th*, 1874.

Messrs. PRESTON & ROBIRA:

GENTLEMEN,—Feeling satisfied from personal observation, or from report of experiments made by our planting friends in the interior, of the merits of the Texas Cotton Worm Destroyer, we do not hesitate to give it our indorsement and recommendation. As a destructive agent, we are informed

that it meets every requirement, cheap, easily applied, destructive of the caterpillar, and not injurious to plant or person.

Such a preparation has been the great need of the cotton-growing States, and indeed of every State and country where insects destroy vegetation.

We believe that your Texas Cotton Worm Destroyer will, to a great extent, take the place of all other compounds yet discovered, and will accomplish all that is needed in saving crops from the ravages of the caterpillar, without risk, and at small expense. The crop we believe can always be saved from worms by the timely application of your compound. The real importance of the subject, and the incalculable benefit bestowed upon the farmers by your discovery, has induced us to address you this communication.

We are, gentlemen, respectfully yours,

HOBBY & POST,
GARY & OLIPHANT,
SKINNER & STONE,
ADOUE & LOBIT,
THOMPSON & LYBROOK,
G. W. EMBREY,
BALL, HUTCHINGS & CO.

AN INQUIRY FROM GEN. COLQUITT.

ATLANTA, GEO., *September 15th*, 1874.

MR. A. ROBIRA:

DEAR SIR,—While the ravages of the caterpillar have not been so great or disastrous this year as often heretofore, they have caused considerable damage. Any sure and inexpensive remedy which can be devised for them would be a public benefaction. The evils of most remedies heretofore used have been costliness, damage to the cotton plant, poisoning of stock, etc., and their failure to arrest or destroy the worm If you have succeeded in devising anything free from these difficulties, or the worst of them, it is likely to be of great benefit, and I should particularly like to know more about it. Paris green has been most commonly used, with most, if not all of the evils mentioned.

Yours very truly,

A. H. COLQUITT,
Pres. State Agricultural Society of Georgia.

PRECISE DETAILS.

BOLIVAR PENINSULA, TEX., *Oct. 14th*, 1874.

Messrs. PRESTON & ROBIRA, *Galveston, Texas:*

GENTLEMEN,—I take pleasure in testifying to the efficacy of the "Texas Cotton Worm Destroyer." On the first appearance of the cotton worm in my crop, in July, I procured enough of your compound to apply to nine acres, and I am happy to state that my success was prompt and thorough,

the worms beginning to die in about twelve hours after application. In forty-eight hours they did no further damage, and in about sixty hours all were dead, while the plants remained fresh and green. On some small patches where the compound was not applied, the forms were eaten up as clean as if swept by a fire. I consider that you have by far the best preparation yet discovered for the destruction of the cotton worm, cheap, portable, and efficacious.

Yours truly,

JAS. A. CRENSHAW.

COL. D. D. WATERS MAKES A CONCLUSIVE AND COMPARATIVE TRIAL.

CLEAR CREEK, TEXAS, *Sept. 15th*, 1874.

Messrs. PRESTON & ROBIRA:

The worms having made their appearance all over my field of cotton, I used your Texas Cotton Worm Destroyer on five rows in the centre, on one side of the five rows arsenious acid dissolved in boiling water, and on the other side Paris-green and flour, mixed with the solution of arsenious acid; I failed to destroy the worm, the cotton being entirely destroyed. Your compound as well as the Paris-green mixture killed the worms, with the very important difference that on the portion to which the Paris-green mixture was applied it caused the *cotton to shed its bolls and squares.* The five rows to which the Texas Cotton Worm Destroyer was applied there was no shedding, and the cotton continued to make until frost killed the plant. I do not hesitate in saying that your compound is perfect in every respect.

Yours truly,

D. D. WATERS.

Col. Waters is well known to all Texans as one of the first gentlemen of his section of country.

We now present a letter to the patentees of the Texas Worm Destroyer from Judge William J. Jones, a gentlemen of much reputation in the agricultural and literary world. In early life Judge Jones was for many years the editor of the leading journal in Mobile, and since he has devoted himself to planting has been a frequent contributor to leading agricultural and political papers. He was the first to introduce the culture of sea-island cotton into the State of Texas, and is in all respects abundantly able to speak knowingly of all that pertains to the culture of cotton.

VIRGINIA POINT, TEXAS, *August 4th*, 1874.

To Messrs. PRESTON & ROBIRA:

I take great pleasure in responding to inquiry with regard to my experiment with your Cotton Worm Destroyer on my growing crop of cotton, On the first appearance of the worms I used Paris-green to exterminate

them, which was a full success. I used at the same time a few packages of your compound. About the last of June, when the second brood of worms appeared, I used your compound. My success was prompt and thorough at one-third the cost of the Paris-green. I am satisfied that your compound is equal to any that I have tried, and I have tried them all, in destroying the worm, while it does not injure the plant—it is certainly the cheapest—and less likely to effect the party injuriously in its application than Paris-green, as it leaves *no residuum on the open boll which might endanger the health or the life of the ginner.* The chemical affinities of your preparation have been most skilfully adjusted, producing destruction to the worm without evil consequences to the party sprinkling it. I most heartly congratulate you upon the full success of one of your many experiments to destroy the cotton worm, in which you have toiled for many years with tireless devotion, and the great planting interest of the South cannot fail to evince its appreciation of your labor in this connection. There is now nothing to fear, except the attempt at adulteration which is already apparent in the Paris-green sent to the Southern market. I know of but one remedy for that serious swindle, which will be to confine the manufacture of your compound to some establishment of well-known repute, which will find it to its interest to furnish a genuine preparation on which the planter can safely rely.

Very respectfully,

WILLIAM J. JONES.

Judge Jones's suggestion is timely and will be heeded, our arrangements are such that we are prepared to vouch for every package of the Texas Worm Destroyer that is sold.

FROM A PROMINEMT BANKER AND PLANTER.

HEARNE, *Oct. 26th*, 1874.

Messrs. PRESTON & ROBIRA:

GENTLEMEN,—I have neglected giving you the result of my experiments with your Cotton Worm Destroyer, partly to ascertain fully its effects and partly from neglect.

The worms appeared in Mr. Hearne's field adjoining mine about the 6th of July. On the 14th, I received from you four oz. of your Cotton Worm Destroyer. I applied it to three rows about 300 yards long in his field, where they were very thick, and had commenced "webbing," in about three days I found them all dead except those which were fully grown; three weeks after these rows were green when there were no leaves on the adjoining rows.

About the 25th of July, I received from you about 100 lbs. of the poison. I applied it as fast as the worms spread, and never failed to kill all except those which were fully grown. I applied it until I was satisfied they could not injure my crop. On that part where it was ap-

plied after the heavy rains in August the lower leaves are still green. For cotton that was from three to four feet high I put on 40 gals. water with four oz. to the acre, which I found sufficient. On cotton six and seven feet high I doubled the quantity. I am fully satisfied with the results.

1. It will kill all worms that are not fully grown.

2. By applying it every two or three weeks, cotton can be kept growing until frost.

There is no danger in its use. I used mules for four weeks and their sides were constantly wet with it, and it produced no bad results.

To apply it, I had saddles made with pieces six feet long fastened horizontally to the "horn" and cantal, with ten gal. cans resting on each end; these were mounted on tall mules. With two of them I could apply 30 acres a day.

Your preparation is soluble in water; there is no trouble in mixing it.

Yours truly,

CHARLES LEWIS.

LEWIS & LEWIS,

Bankers, Hearnes, Texas.

FROM JUDGE HARCOURT.

Judge Harcourt is one of the first jurists and most enterprising planters of the State. He has for many years represented the State of Texas in the Grand Lodge of Odd Fellows for the United States.

GALVESTON, 26*th*, *Oct.* 1874.

Messrs. PRESTON & ROBIRA:

GENTLEMEN,—I have just returned from my plantation on old Caney, in Colorado County, and, in compliance with your request, I report the result of my experiments with your "Cotton Worm Destroyer." The worms appeared in *patches* on my place about the 1st Sept., and I directed the application to be made of your compound, according to your instructions, with the exception that it was applied with a hand "sprinkler." My manager was taken sick about the time, and could not give it his personal attention: but the application was satisfactory, so far as testing the virtue of your compound.

When the application is made in the morning, or during the day, when the hot sun is on the plant, I think the evaporation diminishes the effect; but it should be applied late in the evening, and I feel assured that it will in all cases destroy the worm, and save the crop.

Yours, etc.,

JOHN T. HARCOURT.

FROM AN OLD COTTON MERCHANT.

Mr. Quigg, the writer of the following, was for many years a cotton merchant in Galveston. He has, since he resumed planting, been recognized as one of the most successful in the State.

This is to certify that I have used Preston & Robira's compound for destroying the Cotton Worm, and I am perfectly satisfied with it. I would recommend it being used late in the evening or on dark or cloudy weather, which makes it entirely effective.

W. P. QUIGG.

HARLEM PLANTATION,
Aug. 8th, 1874.

I take pleasure in stating that I have known W. P. Quigg for some 8 years, formerly as a citizen and business man of Galveston, and subsequently as a planter, and know that his word may be relied on.

P. S. GEORGE.

I fully indorse Mr. George's statement.

N. B. YARD.

THE TESTIMONY OF AN OLD SOUTH CAROLINA PLANTER.

SANDY POINT, BRAZORIA CO., TEXAS,
October 27, 1874.

MESSRS. PRESTON & ROBIRA, *Galveston:*

GENTLEMEN,—I have deferred writing to you as to the result of the application of your Cotton Worm Destroyer, which I used during last August. I used one bottle of the prepared poison, as directed by you, to a barrel, say forty gallons of water, and sprinkled on the cotton with the pumps gotten from you for the purpose. The poison was applied on some very luxuriant cotton, where the worms were very numerous and of every size. I was disappointed twenty-four hours after in not finding the mall dead, as I expected, but the next day, say thirty-six hours after the application, most of them were in a torpid state and many dead. Still I found a good number on the cotton, having survived the poison. A second crop of worms never appeared on this cotton; after webbing up, they appeared to have died in that state. I considered the effect of the poison too slow, and concluded to put one bottle and a half to the barrel, forty gallons of water, which I did, and applied it in the same manner with decided success; in thirty-six hours there was not a live worm to be found, and the cotton was not injured in the slightest. In this cotton the worms were also very numerous, five, six, and more to the leaf; the barrel of poisoned water gave out before finishing this cut of cotton, but as there are but a few rows, it was determined to leave them for comparison. These few rows were in a few days entirely destroyed, while all the poisoned cotton to the present day is perfectly green, luxuriant, and in bloom. I was for some time very doubtful as to the efficacy and practicability of the application of the poison, but from personal observation and the result of the past season, clearly demonstrated everywhere that the poison was properly applied, makes me a thorough convert as to the entire security of the cotton plant from its great destroyer, the caterpillar.

Very respectfully,

C. M. DESEL.

A PLANTER'S RECOMMENDATION.

BERNARDINE PLANTATION, BRAZORIA CO.,
November 3d, 1874.

Messrs. PRESTON & ROBIRA, *Galveston:*

GENTLEMEN,—In accordance with your request I cheerfully give you this certificate of my unqualified approbation of your most valuable discovery—"The Texas Cotton Worm Destroyer."

I have tried it, and unhesitatingly pronounce it a success, and far superior to any other remedy against the cotton worm I have yet seen tried. I recommend all planters to use it.

Respectfully,
I am yours obliged,
J. W. HANKS.

LETTER FROM EASTERN TEXAS.

MOSCOW, POLK CO., TEXAS, *Nov. 8th*, 1874.

Messrs. PRESTON & ROBIRA:

To-day I take the pleasure of reporting to you the result of your Texas Cotton Worm Destroyer in this neighborhood. Planters who used your poison report favorably of it wherever they followed strictly your directions. It will kill the worms and not burn the leaves. My opinion is the poison should be used when the worm first makes its appearance and not wait for the second and third crops, because the green worm, or forerunner, as he is called, is easier killed than the second and third crop of the worm.

Respectfully yours,
S. BERGMAN.

MESS. PRESTON & ROBIRA, *Galveston.*

GENTS—I have long since been satisfied of the efficacy of your "Texas Cotton Worm Destroyer" but have waited until this time to be sure of there being no doubt.

The poison I received was put up in paper boxes, containing five pounds, a measure for 40 or 42 gallons of water. I discovered the worm near the last of August in considerable force in a cut of level bottom land (late cotton) containing 20 acres. I wrote to you for the remedy. I received it on the 30th of August. On the 1st of September, I applied it to five acres of the above cut, as the worms had made such ravage in the interval that there were not enough leaves left on the rest to hold the poison.

MY MODE OF APPLICATION

Was as follows: I had a large mule hitched to a cart, in which I placed a 52 gallon barrel filled with water, and placed therein two (2) measures of the poison, a driver in front. I took my stand in the rear of the barrel with a "Fountain pump," directed the driver to proceed. We straddled one row and sprinkled four rows on each side, sprinkling nine rows at a

time, which the pump did easily, and thus I passed over the five acres in a thorough manner. I found on leaving a little water in the barrel each time that about the third time filling two measures was too strong, and blistered the leaves a little. I afterward emptied the water out each time and used the two measures without injury.

In passing to the cotton I was sprinkling from the spring I had to pass through a piece entirely eaten up, with the exception of eight rows next the fence, which was green, but somewhat ragged, and worms working vigorously. I concluded to test it on that, which I did, and it stopped the worms, and the cotton continued to bloom and bear until frost, as did all the cotton I sprinkled with your "Texas Worm Destroyer." I found very few worms dead, but they stopped eating, and the cotton is now bending down with bolls. I have no doubt but earlier in the season a second sprinkling would be necessary on account of the new growth. Many persons speak of your remedy—some for, some against. I can only say what it has done for me.

Every acre I sprinkled grew, bloomed and bore until frost, and every acre I did not sprinkle was eaten up entirely by the worms by the 5th of September.

I am, gentlemen, very respectfully, your obedient servant,

JAMES E. HADEN.

COLD SPRINGS, TEXAS, Nov. 13, 1876.

Mr. Jagers, an old farmer, and the most thorough connoisseur in worms, gives his statement in his own words, as also the Dr. J. A. Dupree:

I was on Capt. Haden's premises, and saw the cotton ten days after sprinkling. It was green and doing well. I also noticed very particularly (that being my object in going to see it) that it was not shedding, as some of the poisons cause it to do.

D. L. JAGERS.

Note the following from Judge W. J. Jones:

VIRGINIA POINT, July 24, 1877.

MESSRS. PRESTON & ROBIRA:

The worms made their appearance in my crop of cotton about the 22d of June. I immediately applied your "Destroyer," using the "Fountain Pump" for its distribution, and cleaned the worms out in a few days. About the 15th of this month they reappeared on the same cotton in larger numerical force, when I again resorted to your "Destroyer" and have just finished their annihilation. There is a portion of my crop here, although in the same inclosure (only a ditch between), on which no worms have so far appeared. For this exemption there is no apparent cause.

I have tried every known preparation for the destruction of the cotton worm, but I found none to equal yours in all the essentials of complete success. It is cheap; its efficiency is beyond all question. It does not

affect the cotton plant injuriously if used according to your directions, and can be applied in any kind of weather, except when there is a heavy rainfall, and there is no decided risk of life or health with ordinary care.

WM. J. JONES.

The *Daily Democratic Statesman* of Austin, Texas, of the 24th July, 1877, says editorially :

THE COTTON WORM.—In the past few days the unwelcome cotton worm has made its appearance on several farms in this county, and Capt. Jas. Thompson has been experimenting with the patent worm poison. In the first place, he administered the poison on a few rows and then waited a day or two to see the effect, which proved the most satisfactory. The worms were killed by countless millions, and the rows of cotton on which the poison had been sprinkled looked fresh and vigorous, while the rows which had not been sprinkled showed fearful ravages on the part of the worms. The Captain has now used poison on his entire crop and he expects a heavy yield. Mr. John T. Miller, who was in Mr. Thompson's field on Sunday (yesterday), commenced the application of the poison on his cotton, and he has full faith that the worms will be destroyed and a full crop of cotton made. If every farmer in the country can be induced to use the poison, no doubt a bale of cotton to the acre will be made this season. The poison costs but 50 cents a pound and one-quarter pound is sufficient to each barrel of water. It is administered by means of the common hand sprinklers. Those who have very large crops use a wagon, carrying a barrel or two of the poison in front and two men in the rear with the sprinklers. In this way from fifty to one hundred acres of cotton can be sprinkled in one day, and more where two or three teams can be kept at work. The worms do no damage after the application of the poison, and die within thirty-six hours.

TOBIN BROS., *Austin, Texas :*

GENTS—I have used on my farms near this city, the celebrated Cotton Worm Destroyer, manufactured by Preston & Robira, of Galveston, and I take pleasure in saying that I am perfectly satisfied with it. One application, which costs about 12½ cents an acre, did the work completely and now my cotton on both farms is clear of worms, and I am sanguine of making a fine crop, but for the use of the poison I believe my cotton would have been eaten up. I have also been on Capt. James Thompson's farm since he applied the poison, and the result there is the same. His cotton and mine now look perfectly healthful and very thrifty and no worms exist in my cotton. I believe, from my experience, and from what I have learned from Dr. A. T. Morris, who has used it for the past three years in Brazoria county, that a very large crop of cotton can be raised throughout the State if the farmers will use this great invention.

Respectfully,

JOHN T. MILLER.

AUSTIN, TEXAS, July 28, 1877.

LIBERTY, TEXAS, July 30, 1877.

MESSRS. PRESTON & ROBIRA, *Galveston:*

GENTLEMEN, The cotton worms are very numerous in our country, and your Texas Cotton Worm Destroyer we ordered from you has been freely used. We are pleased to state that where it has been carefully applied

IT HAS PROVED A SUCCESS BEYOND A DOUBT,

though we are satisfied it should be applied when the worms first appear on the cotton.

Some of the farmers suggest that it be put up in tin cans, as in many cases the paper boxes get wet and fall to pieces.

We will report again soon. We expect to use it more freely next month, should the worms appear.

Very respectfully,

J. D. SKINNER & BRO.

The following certificate given voluntarily by a number of intelligent and reliable German planters, who have tried the Texas Cotton Worm Destroyer, was published in the Texas Volksbote, of August 2d, 1877:

BRENHAM, August 1st, 1877.

MR. FISCHER, *Brenham:*

We, the undersigned, here state that we have bought of you, and used the "Texas Cotton Worm Destroyer," and declare that, as a remedy against the cotton caterpillar, we prefer it to every other, being entirely efficacious in destroying the worm, while by its use the plant is not damaged, so long as it is used as directed. We have mixed it in cold water.

JULIUS GRABON,	FR. LUCK,	WM. SHUTHER,
WM. DAMHAUS,	HENRY GRABON,	ANDREW BALS,
WM. KORFF,	R. KRUG.	

BOLIVAR HEARD FROM:

BOLIVAR POINT, August 8, 1877.

MESSRS. PRESTON & ROBIRA:

GENTS—Your

TEXAS COTTON WORM DESTROYER,

has again proved successful under the most unfavorable circumstances.

IT RAINED NEARLY EVERY DAY

while I was applying it to my cotton. I DOUBLED THE DOSE and went right ahead RAIN OR SHINE, and the result is that to-day I have as BEAUTIFUL COTTON, as there is on the coast. There is no doubt in my mind, whatever, that you have one of the

BEST COTTON WORM DESTROYERS

when properly and timely applied that there is IN THE WORLD.

Very truly, yours,

A. J. JOHNSON.

The *East Texas Patron*, Crockett, Texas, of August 9th, 1877, published the following interesting editorial and certificate:

COTTON.

The extraordinary interest, at this time manifested in the fate of the growing crop of cotton by the press throughout the whole country, as well as by all classes of our citizens here at home, attests the all importance of this staple as bearing upon our well being under our existing system of agriculture. Say what we will of cotton, and object as we may to its extensive culture to the almost entire exclusion of all other crops to which we may look, in order to replenish our empty purses, yet, as matters now stand, the fact exists that the farmer, if he want money, must get it through the medium of the cotton bales which his field yield him. In ten at least of these Southern States, the greater part of the labor, mental and physical, of the agricultural class has, during the last seven months, been employed in developing the present cotton crop. This crop under ordinarily favorable circumstances would realize about two hundred millions of dollars. Destroy the cotton crops and with it goes, we may say, this vast sum from the pockets of the famous merchants, professional men, and all other classes of our population. This accounts for the interest which we all feel in its safety. The financial hopes of all depend upon it. The wonder is that there is not more intense anxiety shown in regard to the subject. Our merchants are deeply interested. They have already advanced largely on the present crop, and their future business depends upon it. They should therefore make arrangements, so as to be able to furnish in due time the means of saving the crop, if such is possible.

The article of Dr. Cannon which we have copied in this issue of our paper shows that the proper application of the preparation of Preston & Robira will destroy the destroyer of the cotton crop. The merchants of Moscow, with a view no doubt to their own interest as well as that of the farmer, have wisely made arrangements to furnish the poison to all whose crops are threatened by the worms. Would not a similar course on the part of our merchants be advisable just now? From present indications the time to act has arrived, and we believe the merchants of Crockett, when they have considered the subject, will not be behind those of any other place in the State, but will promptly meet the requirements of the situation to the extent of their ability.

THE COTTON WORM CAN BE DESTROYED.

We give for the benefit of our readers the following communication, addressed by Dr. Cannon, a well known physician of Moscow, to the Moscow

Review. In alluding to this communication the *Review* says, "The Doctor speaks of what he has actually seen." "It is no guess." "The cotton worm can be destroyed," etc. His suggestions in regard to using it for the destruction of the miller, as well as the worm is worthy of consideration.

"I have been solicited by several farmers to give the result of my experiments with the Texas Cotton Worm Destroyer, put up by *Preston & Robira*, of *Galveston*. On last Thursday, the 26th, I applied the poison to about six acres of cotton in the morning. The first mixture contained about 4 ounces of the poison, about 25 pounds of dirty sugar to 26 gallons of water, this was put on about 1½ acres of cotton, with the fountain pump; on the other 4½ acres of the 6, the mixture was made according to the printed instructions, viz: 4 ounces to 40 gallons of water, with the addition of one gallon syrup; this applied to 1 acre of cotton. The worms disappeared on the 6 acres before night, and the cotton was not injured any, not even specked. I put the same amount of poison to about 4 acres on the morning of the same day and that night came a light shower of rain; the next day Mr. Tackaberry and I examined the cotton that was poisoned in the morning. But very few worms visible, all we did see seemed to be sick, or lying on the leaf in a dormant state; and on the 4 acres poisoned in the evening, some of the worms seemed to be affected, but others were lively, apparently unaffected by the poison. We supposed the rain had washed the poison from the cotton before the worm got it. To this latter piece of cotton I have again applied the poison, and this time I put 6 ounces of the poison, one gallon of syrup to 42 gallons water, and the worms have all disappeared from the cotton. My conclusions are that the farmer has it in his power to control the worm. The addition of the syrup or something sweet prevents the poison from killing the cotton, and also furnishes food for the worm and the miller or fly, they will suck it on the leaf and die there.

Mr. S. Bergman witnessed the application of the poison and noted the effect on the cotton, as well as on the worm. We observed the worm apparently sucking the sweetened water, they seemed fond of it, and could be seen, wherever the leaf was wet lying with their heads to it as if sucking it. I have known syrup and honey used for many years to attract the miller and catching them in water while sucking it, and the water made sweet with syrup or honey when dried on plant resembles honey-dew. At night it is moistened by the dew and affords food for the fly every night and morning. I would advise all those who intend using the poison, to use syrup, sugar or honey with it. Make the water sweet and always make it strong enough with the poison to kill the worms. I do not believe 6 ounces to 40 gallons of water when sweetened, will kill the plant, and believe it will be more sure to destroy the worm. Try it.

J. J. CANON.

The following certificate in relation to the success of this death dealing drug is from gentlemen of well known standing and ability.

AUSTIN, TEXAS, *August* 17, 1877.

EDITOR DEMOCRATIC STATESMAN:

On the 16th of August, in company with other gentlemen, we visited several farms in this vicinity, upon which experiments have been made in the cotton fields with Preston & Robira's Cotton Worm Destroyer. The plantations of G. H. Burditt, J. J. Osborne and W. M. Dunson were visited successfully. The preparation had been distributed over the fields of each of these, and in neither instance was the crop harmed or lessened in productiveness by the destructive worms. On one place, that of Mr. Osborne, alternate rows of cotton, at some distance from one another were left untouched by the poison. From every stalk, in these rows every leaf was stripped, and the cotton valueless, and producing nothing, while the rest of the field flourishes and a fair crop will be gathered from it. These farmers say that the poison prepared by Preston & Robira will accomplish all that is claimed for it, and they authorize us to use their names in asserting the great value of the worm-destroying preparation, compounded by the gentlemen named above. One farmer in the neighborhood who had used a small quantity of the preparation, said that it availed him little or nothing; but when he saw the fields of Messrs. Burditt, Osborne and Dunson, he confessed that he was peculiarly unfortunate and that the crops of his three neighbors had been saved by the Preston & Robira preparation. But the facts are notorious. Every cotton planter in the vicinity of these plantations, above designated, has seen and confesses the value of the application of this poison, and the demand for it must grow with the extended knowledge of its value, and the prevention of the ravages of the cotton caterpillar may be certainly effected. If farmers reading this statement of simple facts, would test the value of the preparation, they should address Messrs. Alvey or Tobin of this city, for the medicine and refer to the undersigned for particulars:

J. J. Osborne, T. H. Burditt, W. M. Dunson, Capt. J. Thompson, John T. Miller, A. T. Morris, T. C. Thompson, late wholesale druggist of Galveston, and now of the firm of Finlay & Thompson, New Orleans.

SCHULENBERG, TEXAS, *Aug.* 1*st*, 1877.

MESSRS. PRESTON & ROBIRA, *Galveston:*

GENTLEMEN,—Your Worm Destroyer has been thoroughly tested by many of our customers. All agree that for killing the worm, and at the same time leaving the plant in good condition it *excels everything else tried*—but all agree that two measures are required to the acre making it too expensive when compared with other poisons. Could this preparation be put up at a less cost and retain its present strength it would stand without a rival.

Yours, truly,

W. F. UPTON.

In receipt of the foregoing letter, to meet the views of the writer, Messrs. Preston & Robira made a reduction of one half in the price of their preparation: The Texas Cotton Worm Destroyer.

HACKBERRY, LAVACA CO., TEXAS,
July 26th, 1877.

MESSRS. PRESTON & ROBIRA, *Galveston:*

GENTLEMEN,—Enclosed please find order for $375 50-100 on Messrs. Heyck & Helferich, which you will please collect and put to my credit on account.

The Texas Cotton Worm Destroyer has proved to be a success, when sprinkled on cotton plants, strewn over with young worms, which of course is the proper time, but as in the most cases the farmers are not promptly ready for the work, it has become the settled opinion among our farmers that it takes one and a half measures to a barrel of water to give sufficient strength, now as it is calculated that 25 cents buys poison for one acre, it would need a measure one and half times the size and a package corresponding to give full satisfaction.

Very respectfully, yours,
L. E. NEUHAUS.

BOLIVAR POINT, TEXAS, *Sept. 1st*, 1877.

MESSRS. PRESTON & ROBIRA:

GENTS,—This is the third year that I have used your Texas Cotton Worm Destroyer, and have never yet failed to save my crop, as my merchant Mr. Muckle of your city can testify by the amount of cotton that I shipped to him, while my neighbors, who did not use your poison, lost their entire crops. The result has been very marked this year, the worms were thicker than I ever saw them before, I had to apply the poison two or three times. It rained every day while I was using the poison, I had to double the amount, went right ahead, and killed all the worms without injury to the cotton whatever. One of my neighbors, Frank Lindtner, who lives only a mile or so from me who did not use the poison, had his crop entirely eaten up by the worms. Just above him Mr. Albert Plummer used your poison and saved his entire crop. Adjoining his field Mr. H. M. Powell has a farm, did not use the poison, had the best part of his crop destroyed by the worms, all those who have *timely* and *properly* applied your poison have fully agreed that you have the best remedy for destroying the cotton worm, boll worm, etc., that has been or perhaps ever will be invented.

Truly yours,
A. J. JOHNSON.

INDUSTRY, TEXAS, *Aug. 9th*, 1877.

Messrs. PRESTON & ROBIRA, *Galveston:*

GENTLEMEN,—Enclosed find seventy-five dollars on Kauffman & Runye,

of your city against your invoice 28th inst. Your Texas Cotton Worm Destroyer has proven a success and has gained a reputation over this whole country.

Yours, truly,

G. HENNINGS.

CEDAR BAYOU, TEXAS, *July 30th*, 1877.

Messrs. PRESTON & ROBIRA, 178 *Market St., Galveston :*

GENTLEMEN,—Your Cotton Worm Destroyer that we bought July 26th, is a "dead shot." We want more but cannot tell how much exactly. Wont you let us have 60lbs. on same terms as before (we will pay now) and give us the privilege of returning what we do not use.

Yours, truly,

C. F. ILFREY.

PIKE ROAD, MONTGOMERY CO., ALA.
July 18th, 1877.

This is to certify that I used Messrs. Preston & Robira's Texas Cotton Worm Destroyer on my lands last year (1876), and I declare it the best Worm Destroyer that I have ever used.

N. D. BARNETT.

PIKE ROAD, ALA., *July, 18th*, 1877.

This is to certify that I saw Messrs. Preston & Robira's Texas Cotton Worm Destroyer used on Mr. N. D. Barnett's plantation in 1876, and I think it decidedly the best Worm Destroyer I have ever seen used.

J. C. CARTER.

CONCLUSION.

Having shown that there are fatal objections to the use of all other compounds for the destruction of the cotton worm, in their uncertainty, danger, unreliability, and costliness, we commend to public trial the Texas Cotton Worm Destroyer, which is cheap, certain, and harmless, satisfied that no planter who uses it once will ever fear the cotton worm.

This great friend of the cotton planter is manufactured by the

LODI CHEMICAL WORKS, OFFICE 152 CHAMBERS ST., NEW YORK.

PRESTON & ROBIRA,

GALVESTON, TEXAS,
General Agents for the United States.

It is for sale by

H. J. RIVET,
I. L. LYONS,
FINLAY & THOMPSON,
E. J. HART & CO.
} NEW ORLEANS.

J. W. HALE,
JONES & CAREY,
} MONTGOMERY, ALA.

CAWTHORN & COLEMAN, SELMA, ALA.

Either of the agents named will supply orders for the TEXAS COTTON WORM DESTROYER, at 50 cents per pound (sufficient for four barrels of water) and make a liberal discount to those who purchase to sell again.

The following interesting letters recently received, we submit as a conclusion to our work, which we trust may prove valuable to planters throughout the South.

COLD SPRINGS, TEXAS, *March, 23rd,* 1878.

J. CURTIS WALDO Esq., *New Orleans:*

DEAR SIR,—In answer to your circular of December 1st, 1877, I beg leave to state my experience with *cotton,* and the *cotton worm.*

I have watched the growth of cotton and its attendant ills, for the last 20 years, and have been *directly* interested in its cultivation for the past twelve years. The first time I was affected with the caterpiller was in 1865 after my return from the army, but little damage was done however in that year. The next was in 1867 when the whole crop was totaly destroyed and out of two hundred acres planted I gathered nothing. We then attributed it to the wet seasou which prevailed in this section at the time.

And just here I may mention that it is my impressiou after years of connection with different farmers, and my own observation that a wet season we are more apt to have these worms, than of a hot dry season. The only sign that I am aware of is the egg deposited on the leaf before their appearance, and the smell (when once become acquainted with never forgotten) which is emitted from the field before any worm can be discovered, unless by the most watchful "*observer.*"

When they are discovered in their most diminutive state, an application of poison, in some form, is the only preventative that I know of, which must be applied at intervals, as they generally make their appearance at different times in the space of three weeks; or, in other words, web up and hatch out again in that space of time. The first crop, as it is understood, does little harm, except furnishing a supply of eggs for the second and third crops.

I think after eating, many fall on the ground after obtaining their full growth and go into the ground and there remain in the shape of a "cocoon" or "chrysalis," and I have seen hundreds of them plowed up in the spring when preparing the ground for planting.

I have used none of the remedies named in your circular except the "Texas Cotton Worm Destroyer." In 1876 I used that article on 20 acres of cotton, which the worms had begun to make a little ragged. It proved a perfect success with one application with fountain pump; the balance of the cotton on the place was entirely destroyed by the worms, whereas this bloomed and bore until frost.

In 1877 I again applied the remedy with partial success. In this I retarded

the worms about four weeks and had I applied the second time, which was prevented by sickness, I feel confident I could have saved the crop, yet I will say the worms applied themselves more vigorously in 1877 than any year since 1867, which you will observe, has been an era of just ten years, now whether we are to be exempt for another ten years, time alone can tell.

Lastly, I will say that anything like Paris-green and Arsenic that can be put on the cotton without destroying it, and can be retained on the leaf, will kill the worms, yet many of the remedies used are also destructive to stock, and may be injurious to persons in ginning, &c.

I am, very respectfully,

JAMES E. HADEN.

GALVESTON, *March 18th*, 1878.

MR. CURTIS WALDO, *No. 46 Camp Street, N. O.:*

DEAR SIR,—Your communication as to the cultivation of cotton and practical experience in destroying the cotton worm is before me. My first recollection of the cotton caterpillar was I think in 1844 or 1846 when I saw them destroying the crops in September on Ashley river, some twelve miles from Charleston, S. C., and on the Sea Islands contiguous; in fact that year they were pretty much over all the low country—from then until October, 1859, when I moved to Brazoria Co., Texas, I heard or saw nothing of them, I saw a few there on the Moner Plantation, some 9 miles from Columbia, but they were few, not sufficient to attract attention. In the latter part of September, 1861, they were in countless numbers, I have never seen them in greater numbers since—there was not a green leaf in the county: however the crop was already made and no injury sustained by the planter. I think it was not until 1865 that they appeared again, and destroyed the crops entirely; in July, it may have been in 1864, but having misplaced a memorandum book cannot be certain. Since then we have had the worm more or less every season to the partial or entire destruction of the crops.

In reply to your questions:

I have been planting cotton for 20 years. I first saw the cotton caterpillar in 1844 or 1846. A moist atmosphere is congenial and conducive to the worm, and they prevail to the greatest extent in wet seasons causing the plant to be tender and luxuriant. My experience is that with a wet May and June the worm is certain. The gum is left in the ground and fence corners, (in the "cocoon") which hatch out in spring and propogate rapidly, as the season may be favorable or otherwise. I have often thought of the cause of their increase and yearly visitation since the war and at-

tribute it to late ploughing and weedy fields, for grassy fields and poor cultivation has been the order since the war.

I have known Arsenic used with effect; but with the very best result, Paris Green and the Texas Cotton Worm Destroyer, which I think has become most popular both as to the practicability of its application and satisfactory results.

Very respectfully,

C. M. DESEL.

HEARNE, TEXAS, *March* 19, 1878.

MR. J. CURTIS WALDO, *New Orleans.*

DEAR SIR:—Yours containing interrogations with regard to "Cotton Worm" is at hand. What I know is worth but little, but hoping you may from a multitude of witnesses, come to some valuable conclusion, I answer:

1. Twenty-six years in Texas.
2. Some six years.
3. I think the atmosphere has but little to do. I have seen them in extreme drouths and heat. In very dry weather they work slower.
4. I know of no signs except the appearance of the moth.
5. Am unable to say where the germ is left.
6. No.
7. Yes, I have used Paris-green and if it is used thoroughly, it will kill the worm, but I have several objections to it: 1st, it is dangerous to use; 2d, it is too expensive; 3d, it is too much expense and trouble to apply it I have used the Texas preparation, by Messrs. Preston & Robira, with the best results, and I think the only practical article yet discovered, it being a preparation of arsenic perfectly soluble in water and entirely harmless outwardly.

My opinion is that we should make efforts to destroy the moths before the eggs are deposited, as but few planters can be induced to apply any remedy sufficiently, after the worm appears. Giving this hastily for what it is worth, I am yours, etc.,

CHARLES LEWIS.

Dr. HARTER'S

FEVER AND AGUE SPECIFIC,

Is an infallible remedy for the permanent cure of all kinds of Ague, Chills and Fever, Intermittant, Remittant, Bilious, Winter, Continued Congested, Break Bone, Yellow and Lung Fevers. Making

SAFE, CERTAIN AND PERMANENT CURE,

of all kinds of Ague, Intermittent Fevers, and Periodic diseases, it has no equal in the world. Warranted to cure in every case. Price only 75 cents.

Dr. Harter's Liver Pills,

Combine the two essential qualities of a **Superior Family Pill** they act as a mild and efficient purge, and at the same time they are the best Liver Pills ever offered to the public.

These pills are as innocent as bread, yet all powerful as the remover of sickness, May be taken at any time, day or night, without alteration in diet or fear of cold.

Dr. Harter's Iron Tonic,

Strengthens the Stomach. sharpens the appetite, tones and regulates the bowels, and gives steadiness and vigor to the nerves. It is a mild stimulant to the brain, with especial action on the Kidneys, Bladder, and Organs of Generation, both in male and female: it purifies, enriches, gives color and tone to the blood, and increases the quantity, as well as improves the quality.

GIVING VIGOR, VITALITY, ENERGY, POWER AND LIFE ITSELF.

Dr. Harter's Soothing Drops,

Relieves the suffering infant as if by magic, leaving no unpleasant consequences to follow. They soften the gums, reduce the inflammation, cure wind colic and carry the infant safely over the teething period. Thousands of mothers have used them, and they say that they have no equal. They give health and rest to the child, and comfort to the mother.

FOR SALE BY ALL DRUGGISTS AND GENERAL DEALERS.

OFFICE AND LABORATORY,

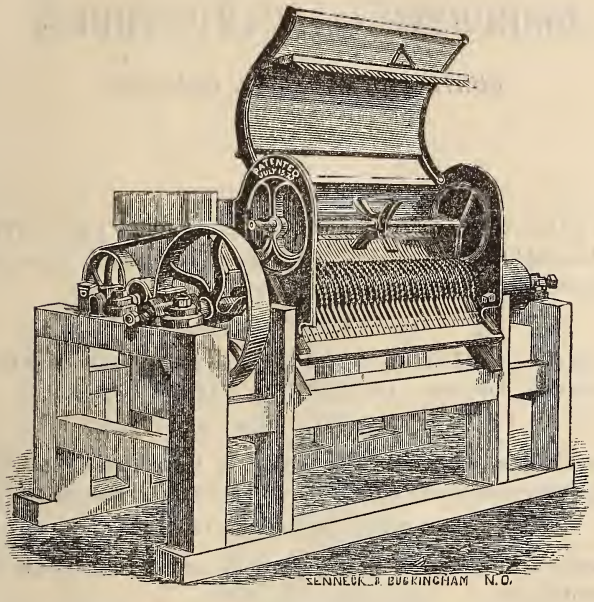
213 N. MAIN STREET, ST. LOUIS, Mo.

Daniel Pratts's Improved

"REVOLVING HEAD" COTTON GIN,

PATENTED JULY 15, 1873.

Price Reduced to $4.00 per Saw.



This GIN has been in use for the past five seasons, and several recent improvements have been added. It obviates all friction at the ends of the cotton box, prevents the roll from breaking, and gives a

Larger Yield of Lint from the same amount of Seed

than any other Gin in use. The Revolving Head lightens the draft and causes the Gin to run faster with less driving power, thus doing a great deal more work within the same time, while economizing steam or animal power, than any other Gin. The seed being ginned very close, the length of the staple is increased, producing cotton on this account of a greater market value. This improved value, given by length of staple, with extra production of lint, added to increased amount of work done, more than covers the cost of the Gin in every 100 bales ginned. Testimonials sent by mail on application.

JOS. B. WOLFE & CO.,

GENERAL AGENTS,

59.....CARONDELET STREET,.....59

NEW ORLEANS, LA.

A

FINE DENTISTRY.

DR. J. H. MALONEY,

JOSEPHINE, Cor. CAMP STREET,

FOURTH DISTRICT, NEW ORLEANS.

ARTIFICIAL TEETH

Inserted with or without extracting the roots, on a new plan, WITHOUT PAIN. Dr. MALONEY received a Gold Medal– the highest prize—which is a guarantee of the superiority of his work.

DECAYED TEETH.

The treatment and filling of teeth done in such a manner as to make them serviceable for years. OPERATIONS WITHOUT PAIN.

TEETH REGULATED.

The success attending Dr. MALONEY in this branch of the art is attended by thousands who have availed themselves of his services.

ARTIFICIAL PALATES.

Scientifically made and fitted to the mouth in such a manner as to restore speech in all cases.

TEETH EXTRACTED WITHOUT PAIN.

Having secured the safest anæthetic for this operation, patients can rely on having their aching teeth extracted without pain.

Dr. MALONEY

Would call the attention of those interested to the following facts:

That he does nothing but first class operations and uses only the best materials.

That his prices are the lowest in the city for the quality of work done by him.

Consult your interest by calling and examining specimens and prices before going elsewhere.

A. ROCHEREAU & CO.,

SOLE AGENTS FOR THE SALE OF

Krug & Co.'s Champagne,

IMPORTERS OF

WINES,

BRANDIES, SARDINES,

OILS,

VERMOUTH, ETC.

NEW ORLEANS.

1 South William St.
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16 and 18 St. Louis St.
NEW ORLEANS.

CONDENSED INDELIBLE
COTTON MARKING INK,

One Gallon Can Makes one Barrel.

$3.25 per Bbl.

Makes a good mark and cannot be blotted out by rain Planters, Factors, Shippers and Insurance Companies should order their Bales to be marked with our Ink.

PREPARED BY

FREDERICKSON & HARTE,
CHEMISTS,

139 CANAL STREET, Touro Buildings.

ALSO, ON HAND, IN SMALLER CANS,

At $1 per Can.

The BEST WATCH in the World.

We are Sole Agents in this City for what we honestly believe to be the best Watch ever constructed. On application we will send descriptive circulars, proving our assertion.

—ALSO—

AMERICAN WATCHES, Silver Cased, at $10 and upward.
" " Gold " 35 "

A. B. GRISWOLD & CO.,

Cor. CANAL and ROYAL STREETS,

NEW ORLEANS, LA.

GREAT JACKSON ROUTE

Chicago, St. Louis and New Orleans R. R.

NEW ORLEANS TO CAIRO, Ill.,

548 MILES.

The New Orleans, Jackson and Great Northern and Mississippi Central Railroads are now consolidated under the above name and worked under one management, and the line is being improved up to the highest standard. Its reconstruction has been progressing during the past year and a half, and it is in a better condition, both in track and equipment, than ever before. 20,000 tons of steel rails have been laid, 200,000 ties renewed, and over 5,000 feet of bridging rebuilt. Construction and gravel trains are constantly at work, smoothing and ballasting the road-bed. This work will be continued, without regard to expense, until the entire line is renewed, and the phrase "A First Class Road," so often misapplied, belongs to it without contradiction.

In consequence of the improvements made, the speed of Passenger Trains will be greatly increased this season. Fast time, new and elegant coaches, and long runs of sleeping cars, are the attractions now offered to the business and pleasure travel of New Orleans and the country along the line.

TWO DAILY TRAINS

Each way, without change of sleeping cars, run between New Orleans and Cairo, St. Louis, Chicago, Louisville and Cincinnati, and but

ONE CHANGE TO NEW YORK,

and all the principal eastern cities.

EXCURSION TICKETS

Good until November 1st, to Niagara Falls, Waukesha, Ocoromowoc and the numerous and beautiful summer resorts of the Northwest, will be sold at the lowest rates.

Call on us and satisfy yourselves as to the superiority of the JACKSON ROUTE before purchasing tickets to any point East or North.

TICKET OFFICE, 22 CAMP STREET, Cor. of COMMON,

NEW ORLEANS,

F. CHANDLER,
General Passenger Agent.

A. D. SHELDON,
Ticket Agent, New Orleans.

WHITMAN'S FOUNTAIN PUMP.

BEST WAY TO APPLY POISON TO COTTON.

Tuscaloosa, Alabama, July 25, 1877.

We tried the Fountain Pump last year and think it the best way to apply the poison to cotton. R. & J. McLESTER.

Charleston, S. C., July 26, 1877.

I exhibited the pump in the presence of a number of the most successful planters (the cotton plant being about five feet high). They pronounce it a success. A. HASELL HEYWOOD.

IT PERFORMED ADMIRABLY.

Snowdoun, Alabama, March 20, 1877.

I ordered a pump of you last summer which arrived just in time to be used against the Cotton Caterpillar. It performed admirably.

HAMILTON M. McINTYRE.

SAVE THE COTTON GIN HOUSES FROM FIRE.

"The aggregate loss to the South by the burning of gin-houses every season must amount to a large percentage of the value of the entire crop. In Georgia alone, nearly twenty houses with their contents have been destroyed."—*Savannah Advertiser.*

COTTON GIN HOUSE SAVED.

Covington, Tenn., Nov. 22, 1875.

Please send me one more of your Fountain Pumps. We have two of your pumps in this place, the use of which extinguished a fire in the Lint Room of a steam Cotton Gin. C. N. McFADDEN,

Galveston, Texas, Sept. 12, 1876.

We have discovered, by personal experience that the Fountain Pump is the best instrument for applying ours or any other poison in solution.

PRESTON & BOBIRA,
Proprietors Texa Cotton Worm Destroyer.

Oxford, N. C., Dec. 11, '77.

We have just had a fire in our town, and used the pump you sent us in June to great advantage. Indeed we think it would have been a very disastrous fire had it not been for the pump. We think every family in a country village or town should have at least one.

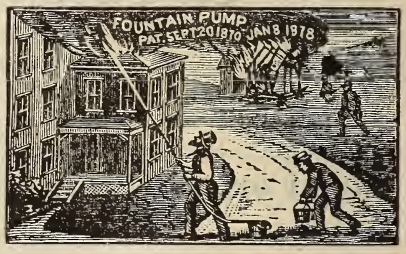
H. C. & W. G. HENDRON.

NO DWELLING,
COUNTRY HOME,
OR FACTORY

Should be without the Fountain Pump.

Send for Illustrated Circuliar.

J. A. WHITMAN,
Sole Proprietor and Manufacturer,
Providence, R. I.



I. L. LYONS,
WHOLESALE DRUGGIST,
Corner Camp and Gravier Streets, New Orleans,
SELLING AGENT FOR LOUISIANA.

DR. W. BILLE,

Office: 196 Canal Street,

Between DRYADES and RAMPART STS.,

NEW ORLEANS, LA.

"Impotency," Seminal Weakness, Nervous Debility, either caused by abuse or age, permanently cured and full sexual power restored. No man is too old and no young man too debilitated that he cannot be completely restored by Dr. Bille's treatment.

Private Diseases and all Diseases of the Genito-Urinary Organs treated after a new sure and quick method.

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Offered by second-hand dealers and others as the Improved Singer Machine.

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Diarrhoea, Dysentery, Bloody Flux, in one day.
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Headache, Earache, Toothache, instantly. Neuralgia, in six minutes.
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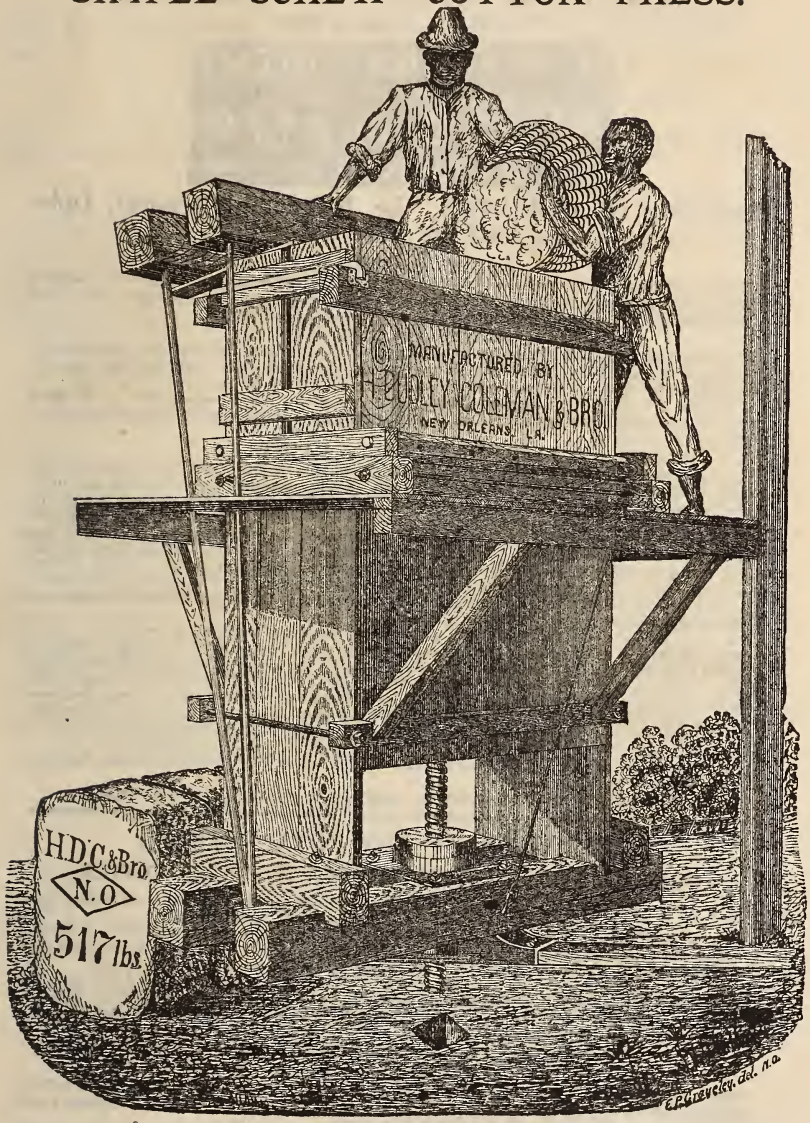

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Combine and formed on entirely different principles from other liquid paints in the world, withstands without injury the action of salt water atmosphere. Hot sun and other tests under which all others even best white lead have failed. They possess a superior body, richness of color—and are second to none in the quality of spreading evenly over surfaces either rough or smooth. Especially valuable to factories, Railroads and Iron Works, etc., for which they are the most durable paints in the world. They have an elasticity never before attained in the world by any paint or coloring matter. Here is what one of the oldest and best painters in the State says of them, one who has been an authority in Jackson for forty years on all subjects connected with his profession of house and decorative painting:

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CIRCULATION OF THE ROYAL HERALD,

DURING THE SEASON OF 1877-'78, 26.750 COPIES.

OFFICE OF L. GRAHAM, Book and Job Printer, 73 Camp St.,
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This is to certify, that during the season of 1877-78, I printed and delivered to J. CURTIS WALDO, ten issues of the ROYAL HERALD, Official Journal of Carnival Court, and that in the ten issues there were *Twenty-Six Thousand Seven Hundred and Fifty Copies.*

L. GRAHAM, Book and Job Printer.

Personally appeared before me, Second Justice of the Peace, for the Parish of Orleans, City of New Orleans, on this the 7th day of March, 1878, Lewis Graham, who being sworn deposes and says, that the foregoing instrument is true and correct.

JOHN McCORMICK, Second Justice of the Peace.

Special Notice.—The first number of the ROYAL HERALD for the season of 1878-79 will be issued in November next, and the paper will be sent to any address, postage paid, for the entire season on receipt of twenty-five cents.

The paper is considered *free*, this charge is made to cover the cost of mailing or delivering it.

Many persons at a distance have written to us requesting copies, which have always been sent, and no doubts hundreds would be glad to get the paper, and this announcement is made for their information and guidance.

No effort will be spared to make the ROYAL HERALD in the future, as it has been in the past, one of the attractions of the Carnival Season.

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All kinds of COTTON GINS repaired promptly and at greatly reduced prices. Gin Saws, Ribs, Bristles, and all duplicate parts of Cotton Gins kept constantly on hand and for sale.

Orders left at Eagle Cotton Gin and Machinery Depot of W L. Cushing, No. 61 St. Charles Street. will meet with prompt attention.

Persons knowing the precision and nicety of the work required in repairing Cotton Gins will see the advantage of having it done by a machinist who has for the past twelve years made it a specialty.

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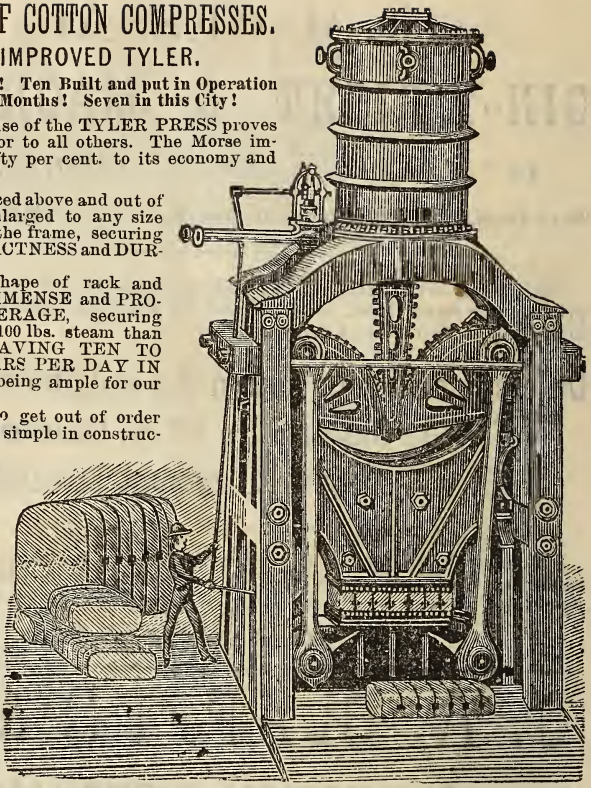
THE GIANT OF COTTON COMPRESSES.

MORSE IMPROVED TYLER.

Unparalled Success! Ten Built and put in Operation in the last Six Months! Seven in this City!

The forty years' use of the TYLER PRESS proves its principle superior to all others. The Morse improvements add fifty per cent. to its economy and effective power.



The cylinder, placed above and out of the way, can be enlarged to any size without spreading the frame, securing remarkable COMPACTNESS and DURABILITY.

The ingenious shape of rack and secters gives an IMMENSE and PROGRESSIVE LEVERAGE, securing better results with 100 lbs. steam than others with 140, SAVING TEN TO FIFTEEN DOLLARS PER DAY IN FUEL, two boilers being ample for our largest presses.

It is least liable to get out of order because so perfectly simple in construction.

Its free piston alone gives it 25 per cent. of power. By an ingenious shape of the channel bars nearly all the slack of the ties is taken up.

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New Presses wanted for the opening of next season's business shonld be ordered at once. Apply to or address

STEERS & MORSE, Patentees and Contracting Builders,

185 GRAVIER STREET, NEW ORLAENS.

EXTRAORDINARY COMPRESSING,

The new Morse compresses erected in this city during the present season are producing astonishing results, by way of largely increased cargoes of cotton from this port.

The ship Mary E. Riggs, of 1277 tons American register (1226 British,) has just received a cargo of 5400 bales of cotton, weighing 2,568,640 pounds; making 2011 per ton American and 2095 lbs per ton British measurement.

The first cargo of this ship from this port was 3740 bales; the last and largest (previous to the present one) was 4364 bales, weighing 1,943,498 pounds. Her present cargo of 5400 bales exceeds her largest previous cargo 1036 bales, or 625,142 pounds. With freight at one cent per pound and five per cent. primage the value of this increase, for this medium sized vessel, is about $6600. This cargo was compressed without the advantage of a "Tie Puller," in the ordinary course of business, by the Factors' Press, one of the seven large Morse compresses recently erected in New Orleans by S. B. Steers & Co.

The only cargoes of single bales approximating this one, are the following:

The Minnie H, Gerow (1304 tons American) last season, from the Champion Press, 2,481,790—1903 lbs per ton measurement.

The Western Empire (1399 tons American register) last season, from the Champion Press, 2022 per ton.

The Minnie H. Gerow this season, from the International Press (Taylor hydraulic, 64-inch cylinders), 2,644,906—2028 pounds per ton.

But in all these cargoes of 1903, 2022 and 2028 per ton measurement. the pullers were used, for which is claimed an advantage of 20 per cent.

If the present cargo of the Mary E. Riggs had had this advantage, her 2011 pounds per ton American, and 2095 British, would have been 2413 and 2514 per ton—or say 20 per cent larger than any cargo of single bales ever cleared in this country.

The Mary E. Riggs' largest previous cargo of 4,364 bales averaged only 445 lbs per bale. Present cargo of 5400 averages 476. Gain in bales is therefore over 1400 instead of 1076.

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STEAM

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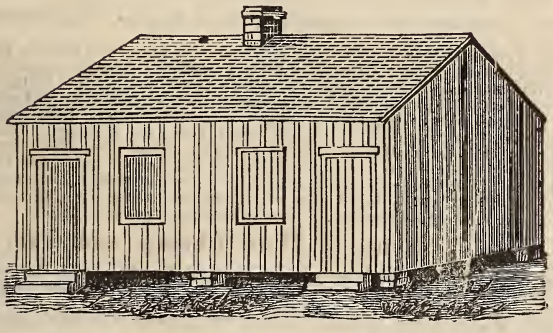

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We offer to the trade a full and complete assortment of

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☞We issue articles which, for their purity, delicate compounding, standard weight and measure, can not be excelled. We claim for our preparations no secret combination. To promote the public welfare and to afford to each one afflicted with disease an opportunity to procure good and pure medicines at low prices, we offer these articles, feeling confident that they will be appreciated from their intrinsic merit alone. We claim, further, that all preparations to which we append our signature or trade-mark, embrace the highest order of chemical combination, and are prepared on scientific principles, from the finest material that money will purchase.

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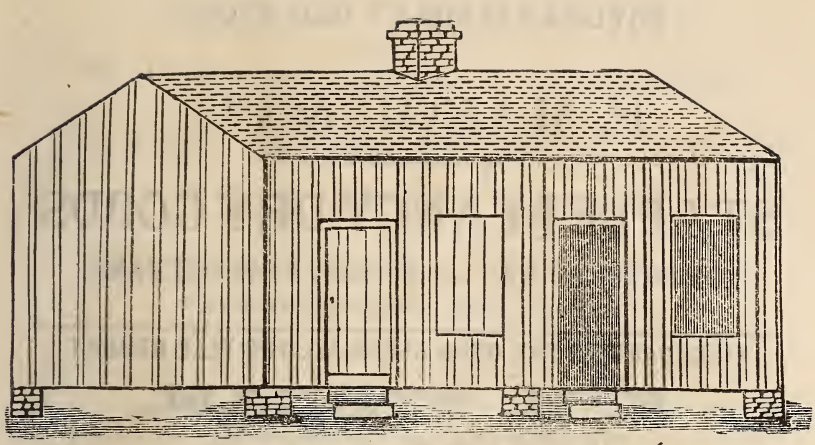

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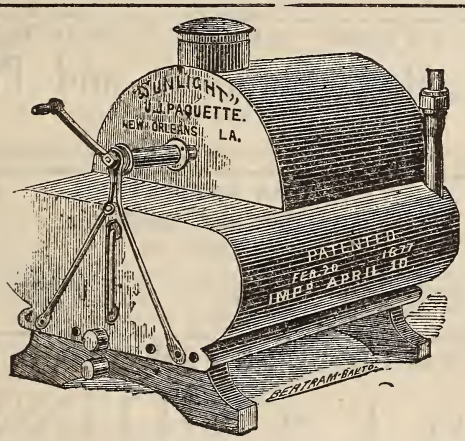

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THE TRIUMPH

Steam Cotton Band Puller and Buckler.

A NEW AND IMPORTANT INVENTION TO FACILITATE COMPRESSING COTTON.

This great invention consists of two parts, which are found to be absolutely requisite to the successful banding of cotton by steam.

The first is the engine or machine by which the steam is applied for drawing the bands taut to the bale; the second is the buckle by means of which the bands are held without slip, down to the exact point at which they are drawn; thus by both the engine and the buckle, to whatever size a bale of cotton is compressed, that compression is saved by the bands being drawn so as to hold it.

This is exactly what this engine and buckle does; what it was intended to do, and what in fact it accomplishes—it is precisely the same object and purpose for which a compress is used. But without this invention the compress itself looses one-third of its work, for the bale expands to from one-third to one-half its compressed size. So that this engine and buckle are eminently requisite to the compress, provided it be easy of adjustment, swift in its work, and economical in its use. And these three essential points are thoroughly covered by this invention.

The engine or machine can be easily put up to any style or sizeof compress, and at a price which its use for a very brief time would repay: it is simple, plain and without the least complication, so that the ordinary laborers required to do compressing can easily handle it.

Its power is derived from a cylinder, supplied by steam from the boilers of the compress; its pistons and levers by easy and graceful motions, move two beams up and down, by alternate motion; on the one beam is placed the band, and the other the buckle. "Fingers" are made and so contructed as to hold the buckle freely and securely and with ample room for their proper movement, and with absolute security. The buckle is placed in position, the band passed around the bale, through the buckle and into the grip attached to the upper beam, steam is applied, the beam holding the end of this band moves swiftly up, drawing the bands taut to the bale, the beam holding the buckles moves by equal motion down to the center of the bale; the band at its end is loosened, the buckles revolve and the bands are held taut on the bale at the point of the lowest compression of the bale.

Thus this invention is not only a "band puller" but a buckler and performs its work thoroughly, turning out from 60 to 80 bales per hour and making a perfect bale.

THE BUCKLE.—The buckle is simply perfect; it is cheap and strong, and can be furnished on the order of a day by the million. *The old bands are used as they come off the bales, and nothing is lost.*

The inventor is the Rev. F. M. Logue, of Vicksburg, Miss., aided and assisted thoroughly by Judge Harris of the same city; it is the consummation of six years of hard study and expense, and during that time the whole subject and every branch of the art in all its details have been thoroughly considered, tried and explored on this invention, in the accomplishment of the object. It has required great courage, patience and fortitude in its achievements. The owners of the invention, are F. M. Logue, J. W. M. Harris, John A. Klein and Gen. N. H. Harris. Mr. Lewis Johnson, of New Orleans, is the skillful builder of this machine, to whose genius the inventor and owners are justly indebted.

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